



Docket No.: CL001010

Serial No.: 09/776,705

Inventor: Karl GUEGLER et al.

Title: ISOLATED HUMAN TRANSPORTER PROTEINS...

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1 CCATTCCAAA CAAGTCAGGA AAGGCTGCAC AGGACTGGAT AAATAATCAA
51 GAACAGAGTG TTCTGAACAT CAACACAAAG TGGAAGAACCTTAAGCTGAA
101 GGTACAGTAT ATTATTTACA CTGAAGGGGC TTGTTGTTGGG ACAAGAAC
151 GCTGACAGCT CAAATGGATC CCATGAACT GAGAAATGTC AACATCGAAC
201 CAGATGATGA GAGCAGCAGT GGAGAAAGTG CTCCAGATAG CTACATCAGG
251 ATAAGGAAATT CAGAAAGGC AGCAATGAGC AGTCAATTG CTAATGAAGA
301 CACTGAAAGT CAGAAATTCC TGACAAATGG ATTGTTGGGG AAAAGAAC
351 TGGCAGATTG TGCTGATGAA CACCATCCCG GAACCACTTC CTTTGGATG
401 TCTTCATTTA ACCTGAGTAA TGCCATCATG GGCAGTGGGA TCCCTGGCCTT
451 GTCCTATGCC ATGGCTACA CAGGGTCAT ACTTTTATA ATCATGCTGC
501 TTGCTGTGGC AATATTATCA CTGTTATTCAG TTACCCCTTT ATTAAAAAAC
551 GCGCAAGGAAG GAGGGCTTT GATTATGAA AAATTAGGAG AAAAGGCATT
601 TGGATGGCCG GGAAAGATG GAGCTTTGT TTCCATTACA ATGCAGAAC
651 TTGGACCAAT GTCAAGCTAC CTCTTATCA TTAAATATGA ACTACCTGAA
701 GTAATCAGAG CATTCAATGG ACTTGAGAA AATACTGGAG AATGGTACCT
751 CAATGGCAAC TACCTCATCA TATTGTTGTC TTGTTGGAAATT ATTCCTCCAC
801 TTTCGCTCT TAAAAATTTA GGTTATCTTG GCTATACCG TGGATTTCCT
851 CTTACCTGCA TGGTGTGTTT TTGTTAGTGTG GTGATTACAA AGAAATTCCA
901 AATACCCCTGC CCTCTACCTG TTGTTGGATCA CAGTGTGGA AATCTGTCAT
951 TCAACACAC GCTTCCAATG CATGTTGAA TGTGTTACCA CAACTCTGAG
1001 AGTTCTGATG TGAACTTCAT GATGGATTAC ACCACCGCA ATCCCTGCAGG
1051 GCTGGATGAG AACCAAGGCCA AGGGCTCTCT TCAATGACAGT GGAGTGAAT
1101 ATGAAGCTCA TAGTGATGAC AAGTGTGAAAC CCAAATACCTT TGTATTCAC
1151 TCCCGGACGG CCTATGCAAT TCCCTATCCCA GTATTTGCTT TTGTTATGCCA
1201 CCCTGAGGTC CTCTCCATCT ACAGTGAACT TAAAGATCGG TCCCGGAGAA
1251 AAATGCAAAC GGTGTCAAAT ATTCCATCA CGGGGATGCT TGTCAATGTC
1301 CTGCTTGCAG CCCTCTTTGG TTACCTAACCTTCTATGGAG AAGTTGAGA
1351 TGAATTACTT CATGCTACA GCAAAGTGTA TACATTAGAC ATCCCTCTTC
1401 TCATGGTTGG CCTGGCAGTC TTGTTGGCAG TAAACACAAAC TGTGCCCCATT
1451 GTCCTCTTCC CAACTCTGAC ATCACTGATC ACACCTGTTAT TTCCAAACG
1501 ACCCTTCAGC TGGATAACGAC ATTCTCTGAT TGCAGCTGIG CTTAATGCA
1551 TTAATAATGT CTCTGGCAGTC TTGTTGGCAA CTATAAAAATA CATCTTGGGA
1601 TTCTATGGGG CTCTCTCTGC CACTATGCTG ATTGTTTATTC TTCCAGCAGT
1651 TTGTTATCTT AACTTGTCAGA AGAAAGAAC TTGTTAGGTCA CCCCACAAAGG
1701 TCGGGGCTT AATTTTCCCTT GTGGTTGGAA TATTCCTCAT GATTTGGAGC
1751 ATGGCACTCA TTATAATTGA CTGGATTATGATCCTCCAA ATTCCAAGCA
1801 TCACTAACAC AAGGAAAGAT AC (SEQ ID NO:1)

FEATURES:

5'UTR: 1-163
Start Codon: 164
Stop Codon: 1805
3'UTR: 1808

FIGURE 1A



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HOMOLOGOUS PROTEINS:

Top BLAST Hits:

	Score	E
CRA 145000039337444 /altid=gi 12017941 /def=gb AAC45335.1 AF295...	975	0.0
CRA 114000033649823 /altid=gi 10945621 /def=gb AAG24618.1 AF298...	597	e-169
CRA 160000003782430 /altid=gi 8677401 /def=gb AAF75589.2 AF1736...	591	e-168
CRA 148000002720069 /altid=gi 8248427 /def=gb AAF74195.1 AF2496...	587	e-166
CRA 8700000006802 /altid=gi 7243145 /def=dbj BAA92620.1 (AB03...	578	e-164
CRA 18000005069115 /altid=gi 5870893 /def=ref NP_006832.1 tran...	500	e-140
CRA 88000001154721 /altid=gi 7406950 /def=gb AAF61849.1 AF15985...	496	e-139
CRA 66000019404613 /altid=gi 9506837 /def=ref NP_061849.1 amin...	495	e-139
CRA 100000004435450 /altid=gi 8926332 /def=gb AAF81797.1 AF2730...	492	e-138
CRA 335001098689635 /altid=gi 11434147 /def=ref XP_006635.1 hy...	480	e-134

EST:

gi 10934204 /dataset=dbest /taxon=96...	1072	0.0
gi 10286121 /dataset=dbest /taxon=96...	718	0.0
gi 9872634 /dataset=dbest /taxon=960...	680	0.0
gi 2656674 /dataset=dbest /taxon=9606 ...	549	e-154
gi 9882497 /dataset=dbest /taxon=960...	541	e-151
gi 689641 /dataset=dbest /taxon=9606 /...	525	e-147

EXPRESSION INFORMATION FOR MODULATORY USE:

library source:

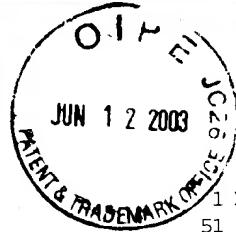
Expression information from BLAST dbEST hits:

gi|10934204 Whole embryo (mainly head)
gi|10286121 Hepatocellular carcinoma
gi|9872634 Non-cancerous liver
gi|2656674 Fetal liver spleen
gi|9882497 Non cancerous liver
gi|689641 Liver

Expression information from PCR-based tissue screening panels:

Mixed tissue (Brain, Heart, Kidney, Lung, Spleen, Testis, Leukocyte)

FIGURE 1B



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1 MDPMEIRNVN IEPDDESSSG ESAPDSYIRI GNSEKAAMSS QFANEDTESQ
51 KFLINGFLGK KKLADYADEH HPGITSGMS SFNLSNAIMG SGILGLSYAM
101 AYTGVILFII MLLAVAILSL YSVHLLLKTA KEGGSЛИYEK LGEKARGWPG
151 KIGAFVSIIM QNIGAMSSYL FIIKYELPEV IRAFMGLEEN TGEWYLNQNY
201 LIIFVSVGII LPLSILKNLG YLGYTSGFSL TCMVFFVSVV IYKKFQIPCP
251 LPVLDHSVGN LSFNNILPMH VVMLPNSES SDVNFMMDYT HRNPAGLDEN
301 QAKGSLHDSC VEYEAHSDDK CEPKYFVFN SRTAYAIPILV FAFVCHPEVL
351 PIYSELKDRS RRKMQTIVSNI SITGMLVMYL LAALFGYLTG YGEVEDELLH
401 AYSKVYTLI PLIMVRLAVL VAVTQIVPIV LFPIRITSVIT LLFPKRPFSW
451 IRHFLIAAVL IAIINNLVIL VPTIKYIFGF IGAASSATMLI FILPAVFYLK
501 LVKKEIFRSP QKVGALIFLV VGIFFMIGSM ALIIIDWIYD PPNSKHH (SEQ ID NO:2)

FEATURES:

Functional domains and key regions:

[1] PDOC00001 PS00001 ASN_GLYCOSYLATION
N-glycosylation site

Number of matches: 5

- 1 83-86 NLSN (SEQ ID NO:6)
- 2 260-263 NLSF (SEQ ID NO:7)
- 3 264-267 NNIL (SEQ ID NO:8)
- 4 276-279 NNSE (SEQ ID NO:9)
- 5 369-372 NISI (SEQ ID NO:10)

[2] PDOC00004 PS00004 CAMP_PHOSPHO_SITE
cAMP- and cGMP-dependent protein kinase phosphorylation site

503-506 KKET (SEQ ID NO:11)

[3] PDOC00005 PS00005 PKC_PHOSPHO_SITE
Protein kinase C phosphorylation site

Number of matches: 7

- 1 33-35 SEK
- 2 49-51 SQK
- 3 129-131 TAK
- 4 290-292 THR
- 5 360-362 SRR
- 6 473-475 TIK
- 7 506-508 TFR

[4] PDOC00006 PS00006 CK2_PHOSPHO_SITE
Casein kinase II phosphorylation site

Number of matches: 5

- 1 18-21 SSGE (SEQ ID NO:12)
- 2 22-25 SAPD (SEQ ID NO:13)
- 3 129-132 TAKE (SEQ ID NO:14)
- 4 305-308 SLHD (SEQ ID NO:15)
- 5 309-312 SGVE (SEQ ID NO:16)

FIGURE 2A



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PDOC00008 PS00008 MYRISTYL
N-myristylation site

Number of matches: 6

1	95-100	GLSYAM (SEQ ID NO:17)
2	153-158	GAFVSI (SEQ ID NO:18)
3	164-169	GAMSSY (SEQ ID NO:19)
4	186-191	GLEENT (SEQ ID NO:20)
5	296-301	GLDENQ (SEQ ID NO:21)
6	482-487	GASSAT (SEQ ID NO:22)

[6] PDOC00009 PS00009 AMIDATION

Amidation site

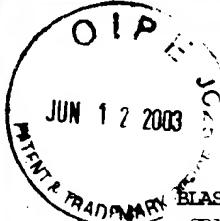
58-61 LGKK (SEQ ID NO:23)

Membrane spanning structure and domains:

Helix	Begin	End	Score	Certainty
1	79	99	1.125	Certain
2	102	122	2.503	Certain
3	153	173	1.197	Certain
4	197	217	1.785	Certain
5	222	242	2.123	Certain
6	332	352	1.240	Certain
7	370	390	2.166	Certain
8	414	434	1.301	Certain
9	453	473	1.520	Certain
10	476	496	2.166	Certain
11	515	535	2.628	Certain

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FIGURE 2B



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BLAST Alignment to Top Hit:

>CRA|145000039337444 /altid=gi|12017941
/def=gb|AAG45335.1|AF295535_1 (AF295535) amino acid
transport system A3 [Rattus norvegicus] /org=Rattus
norvegicus /taxon=10116 /dataset=nraa /length=547
Length = 547

Score = 975 bits (2492), Expect = 0.0
Identities = 478/547 (87%), Positives = 508/547 (92%)

Query: 1 MDPMELRNVNIEPDDDESSGESAPDSYIRIGNSEKAAMSSQFANEDTESQFLINGFLGK 60
MDP+ELR+VNIIEP ++S S +S Y +GNSEK AM SQFANED ESQFLINGFLGK
Sbjct: 1 MDPIELRSVNIIEPYEDSCSVDSIQSCYTMGNSEKGAMDSQFANEDAESQFLINGFLGK 60

Query: 61 KKLADYADEHHPGTTSGMSSPNLNSNAIMGGILGLSYAMAYIGVILFIIMLLVAILSL 120
K L DYADEHHPGTTSGMSSPNLNSNAIMGGILGLSYAMA TG++LF+IML VAILSL
Sbjct: 61 KTLTDYADEHHPGTTSGMSSPNLNSNAIMGGILGLSYAMANTGIVLFVIMLLVAILSL 120

Query: 121 YSVHLLLKTAKEGGSLIYEKLGEKAFGWPCKIGAFVSITMQNIGAMSSYLFIIKYELPEV 180
YSVHLLLKTAKEGGSLIYEKLGEKAFGWPCKIGAF+SITMQNIGAMSSYLFIIKYELPEV
Sbjct: 121 YSVHLLLKTAKEGGSLIYEKLGEKAFGWPCKIGAFSITMQNIGAMSSYLFIIKYELPEV 180

Query: 181 IIRFMGLEENTGEWYLNGNYLIFVSVGIIILPLSLLKNLQYLGTYSGFSLTCMVFFVSW 240
IR FMGLEENTGEWYLNGNYL+-FVSVGIIILPLSLLKNLQYLGTYSGFSLTCMVFFVSW
Sbjct: 181 IRVFMGLEENTGEWYLNGNYLVLFVSVGIIILPLSLLKNLQYLGTYSGFSLTCMVFFVSW 240

Query: 241 IYKKFQI PCPPLPVLDHSGVGNLSFNNTLPMHVVMLPNNSSESDVNFMMDYTHRNPAQLDEN 300
IYKKFQI PCPPLPVLDH+ GNL+FNNTLPMH+MLPNNSES+ +NFM+DYTHR+P GLDE
Sbjct: 241 IYKKFQI PCPPLPVLDHNNGNLTFNNTLPMHVVMLPNNSESTGMNFMDYTHRDPEGLDEK 300

Query: 301 QAKGSLHDSGVEYEAHSDDKCEPKYFVFNRTAYAIPILVFAVCHPEVLIYSELKDRS 360
A G LH SGVEYEAHs DCK+PKYFVFNRTAYAIPIL FAFVCHPEVLIYSELKDRS
Sbjct: 301 PAAGPLHGSVGEYEAHSGDKCQPKYFVFNRTAYAIPILAFAFVCHPEVLIYSELKDRS 360

Query: 361 RRKMQTIVSNISITGMLVMYLLAALFGYLTFYGEVEDELLHAYSKVYILDPLILMVRALV 420
RRKMQTIVSNISITGMLVMYLLAALFGYL+FYGEVEDELLHAYSKVYD LLMVRALV
Sbjct: 361 RRKMQTIVSNISITGMLVMYLLAALFGYLSFYGEVEDELLHAYSKVYTFDTALLMVRALV 420

Query: 421 VAVITQIVPIVLPIRTSITLLEPKRPFWSIRHFLIAAVILIAINNLVILVPTIKYIFGF 480
VAVT TVPIVLPIRTSITLLEP+RPFWS++HF IAA++IAINNLVILVPTIKYIFGF
Sbjct: 421 VAVITQIVPIVLPIRTSITLLEPFRRPFSWVHFGLIAIIIATNNLVILVPTIKYIFGF 480

Query: 481 IGASSATMLIFILPAVFYKLKVKEFTRSPQKVGLALFLVVGIFFMGSMALIIIDWIYD 540
IGASSATMLIFILPA FYLKLKVKE RSPQK+GAL+FLV GI FM+GSMALIIIDWIY+
Sbjct: 481 IGASSATMLIFILPAFAFLKLKVKEPLRSPQKVGLALFLVIGIIFMMGSMALIIIDWIYD 540

Query: 541 PPNSKHH 547 (RESIDUES OF 1-547 OF SEQ ID NO:2)
PPN HH
Sbjct: 541 PPNPDHH 547 (SEQ ID NO :4)

>CRA|114000033649823 /altid=gi|10945621
/def=gb|AAG24618.1|AF298897_1 (AF298897) amino acid
transporter system A [Homo sapiens] /org=Homo sapiens
/taxon=9606 /dataset=nraa /length=506
Length = 506

Score = 597 bits (1522), Expect = e-169
Identities = 315/549 (57%), Positives = 383/549 (69%), Gaps = 46/549 (8%)

Query: 1 MDPMELRNVNIEPDDDESSGESAPD---SYIRIGNSEKAAMSSQFANEDTESQFLINGF 57
M E+ +I PD++SSS S D SY +--+AA+ S +A+ D E+Q FL
Sbjct: 1 MKKAEMGRFSISPDEDSSSYSSNSDFNYSY---PTKQALKSHYADVDPEQNQFLESN 56

FIGURE 2C

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Query: 58 LGKKKLADYADEHHPGTTSGMSSFNLSNAIMGSGILGLSYAMAYGVILFIIMLLAVAI 117
 LGKKK Y E HPGTTSGM S FNLSNAI+GSGILGLSYAMA TG+ LFII+L V+I
 Sbjct: 57 LGKKK---YETEFHPGTTSGMSSFNLSNAIVGSGILGLSYAMANTGIALFIILLTFVSI 113

Query: 118 LSLYSVHLLIKTAKEGGSILYEKLGEKAFCWPGKIGAFVSIITMQNIGAMSSYLFIIKYEL 177
 SLYSVHLLIKTA EGGSL+YE+LG KAFG GK+ A SITMQNIGAMSSYLFI+KYEL
 Sbjct: 114 FSLYSVHLLIKTAKEGGSILYEQLGYKAFGLVGKLAASGSITMQNIGAMSSYLFIVKYEL 173

Query: 178 PEVIRAFMGLEENTGEWYLNGNYLIIFVSGIILPLSLLKNLGYLGYTSGPSLTCMVFFV 237
 P VI+A +E+ TG WYLNGNYL++ VS+ +ILPLSL +NLGYLGYTSG SL CMFFF+
 Sbjct: 174 PLVIQALTNIEDKTLWYLNGNYLVLLVSLVILPLSLFRNLGYLGYTSGSLLCMVFFL 233

Query: 238 SSVIYKKFQIPCPPLPVLDHSVGNLSFNLPMHVMPLPNSESSDVNFMDYIHRNPAGL 197
 VVI KKFO+PCP+ + N + N TL ++P
 Sbjct: 234 IVVICKKFQVPCPVEAA--LIINETINTLQTPTALVP----- 269

Query: 298 DENQAKGSLHDGGVEYEAHSDKCEPKYFVNSRTAYAIPILVFAFVCHPEVLPYIYSELK 357
 + + +D C P YF+FNS+T YA+PIL+F+FVCHP VLPIY ELK
 Sbjct: 270 -----ALSHNVTENDSCRPHYFIFNSQTIVYAVPILIFSFVCHPAVLPIYEELK 317

Query: 358 DRSRRKMQTVSNISITIGMLVMYLLAALFGYLTIFYGEVEDELIHYASKVYTLIDPLIMVRL 417
 DRSRR+M VS IS M +MYLLAALFGYLTIFY VE ELIH YS + DI LL+VRL
 Sbjct: 318 DRSRRRMVNVSISFFAMFLMYLLAALFGYLTIFYEHVESELLHTYSSILGIDILLIVRL 377

Query: 418 AVLAVTQTVPIVLFPIRTSVITLLFPKRPPFSWIRHFLIAAVLIAANNVILVLPVTIKYI 477
 AVL+AVT TVP+V+FPIR+SV LL + FSW RH LI ++A N+LVI VPTI+ I
 Sbjct: 378 AVLMAVTLTVPVVFPIRSSVTHLLCASKDFSWRHSLLTVSIIAFINLLVIFVPTIRD 437

Query: 478 FGFFIGASSATMLIFILPAVFYLKLVKKETFRSPQKVGAFLFLVVGIFFMIGSMALIIIDW 537
 FGFFIGAS+A+MLIFILP+ FY+KLVKE +S QK+GAL FL+ G+ M GSMALI++DW
 Sbjct: 438 FGFFIGASAASMLIFILPSAFYIKLVKEPMKSVQKIGALFLLSGVLVMIGSMALIVLDW 497

Query: 538 IYDPPNSKH 546 (RESIDUES OF 1-546 OF SEQ ID NO:2)

+++ P H

Sbjct: 498 VHNAAPGGGH 506 (SEQ ID NO :5)

Human search results (Pfam):

Model	Description	Score	E-value	N
PF01490	Transmembrane amino acid transporter protein	187.0	2.9e-52	2
CE00398	CD53	4.0	4.8	1

Parsed for domains:

Model	Domain	seq-f	seq-t	hmm-f	hmm-t	score	E-value
CE00398	1/1	90	110 ..	1	23 [. 4.0	4.0	4.8
PF01490	1/2	99	236 ..	1	179 [. 58.9	2.5e-14	
PF01490	2/2	305	529 ..	200	467 .] 133.9	3e-36	

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FIGURE 2D

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1 AGCTTAGCAA TATGGATCAA GAGGTCCAAT ACCTGATTA TAAAAGTTTC
51 AGGACTAAC AAAGGGAAAG AAATAGTTTT TTAAATAGT AGAACCTTTT
101 TTATTTTATG AAAATGTC TTCTATAGAA GAAAGACAAG CCTTTGATT
151 GGGCGCTCG CATGCTGAGT ATGATCAATT TTAAAAGCGA CTCACATCTA
201 GTCACGCTGT GATGAAAGGA TAAGGATAAA AATTCTGAAA TCTTCAGAAA
251 ACCATCGATA AATTATCTAT AAAGAAATAA GAGCCAGACT CATCAATAGA
301 AGCTAGAAGA GAGAAGTTTC TTCAATATTC TGAAAGAAAA TGCTTCGAA
351 TCTAGAATTCA AAACAATTAA CAAAGTTGA AGGCAAATAA AAGAATTTC
401 CAACATGAAG CAACTCAGAA ATTCTTATTA CAGACATAGG CTCATTGTT
451 GAAAAAAGT ATTCAAGGC TTATTTTATG ATAATGCAA ATAAGCTGAA
501 GAAAGAAGAT AGAATGCCGT TCAAGAAACT ACCAGCTGAG CAAGACTCAG
551 AGGTGAGG AGGAACCAT TCAGAATGAG AAAGAGCATA GAAAATTG
601 TTCAAGATG TTGTTAATAGA AAGAATTATAT TTCACTTATTG ATGTTAGTCAA
651 ATACACCACT TTGCTTTAG GGCATACATAT TTATACAGTG ATAATACCTG
701 AATTGCTGCT TATGTTTT CCATGTTAG AAACAACCTA CAGGCAAGTT
751 ATGACACTG TTTCACAGAA CAAGATGAAA ATATTATGAT TCTCAATTG
801 TAAAAGTATT TTATTAACTA AAATAATTAG GAGTGTAGGA GAAGGAAGGA
851 AAGAAAGAAA AAGTGTCTA ATGCTTATG TTGTTATGGG TAACCAGTCT
901 AAAATCTGA ACCAAGCTA AAAAGCTT AGTGAATTAT TCAGATCTAG
951 AATGGCTAAC TTAAAGTAAC AAGCTAAAAA CAGAAACCGT CAATAGTGGT
1001 TGCTGCTGGG AAGTGAGACT GGTACTGTTG GAGAATGAG GAAAACCTT
1051 GTACTCAATT AGTGAAGTTT TTGTTTTTTT CTTTTACCA TATGCTATGTC
1101 TTACTCTAT TCTCTCTTAG CTTTTAACT GCCTCTTTTC ATCTTTTATG
1151 TATATACATT TAGGTGCTT TATATTAATA ATAGTTCTAT TTGTTCTT
1201 CCTGCTTAAA ACACTGTTG CTATTTTTT AAATCTGAG AACTGCTT
1251 TTATTTCTA GACAATTCTC TGCCATTATC TCTTCTGTTG TTGCTCACC
1301 CTAGCTCAC AATTCTCTAT ATTGGAATGA CTATCAGTGT ATATTTGAC
1351 TTGTAATTCT TATTTTTCTC CCATCCTCT TAACTCTTA TTGTTATT
1401 TCTTTTTTA ATCTCTCTAT GCTATAATTG GAGTGTATTG CACAGATCTG
1451 TCTTCAATT TTATAAGTCT TCCCTCAGCT GAGTTTTTTT AAATTCAAT
1501 GATTCTATT TTGTTTTTTT TTGAAATT CCTTTTTTG ACTCTTTTG
1551 CAACAGCTG TTCTCTTTT ATATCCCTT ATAATGTTT TATTCCTG
1601 AAGTTATCTC CTATAATTG AATGTTCTT TCAAAATGTC TTGTTTT
1651 TTAAATTAT GTAAAAGTCC CTTTAAATT CCTTGTAT TGTAGTCC
1701 TTACATGIGA ATTATTCAT TCTCTGIGCC TACTGGCCT TCTGCTAGTG
1751 AGTTTCCATG TGTGTCTAT ATGTTTCTG AATTGAGGAT GTGAACCTT
1801 CTCAAGTGTG AGTTGCTT CAAAAAGTA CTGCCATGGC ACTGGGTGT
1851 GGAGGTATTG CCAATGGTA GTTCTGTTT GTCAGAGGAA TAGCACATT
1901 TGTGACTTCT GGAGCAATT TTGTTAGT TTCTCTGTC AAGATTCT
1951 TATCAAATGG GTATTGACA TGTCTATGACC ACACCTTCA AGAATGATAG
2001 TGTGTTCTCT AATACGATGG TTCAACAATA ATGAAATGAA TCTAAATGGT
2051 AGAAATTCTAG AAGAAATTAT ATCAACTACA TATAGTAGAT TCAAGGCAATT
2101 TTCAAAAAC ACAATGCCAG TCCACCCCT TTCACTATAC AATTGAGGAA
2151 AATGAGGTCC CCAAATGTTA AATGACTTCT GCTGAGATCC AATGAATTAA
2201 AGGCAGAGCA GAGGCTAAAAA TCTAGATCTC TTGTTGTTA AAATACATT
2251 TAATTGACA CAGATGATGA GTAAATGCTGA CCCAGAGGTA AATCTGACT
2301 TTCTTTGTT ACTATTCTTA ACTTGGCTT CAGGATCCAA GTGCCCTAGAA
2351 AGTTACTTCC TAAACTTGTAT CCTCACCTAT GTGCTATATT ATCAAGCATT
2401 TGGGGTGTG AATTCTTCTA TGTCTAATTG AATTAAGCA GTAAATTCT
2451 TTCTAGTTAT TGCTAGTAGA GACACIGGTG GATTCGCTT TGGTAGACCT
2501 TCCCTCTGCA ACAATTCTACT TTGCTCTTCC TTCTTTTAA AACATGATC
2551 CCACTCACAA ATACCTAAAT TTCTTGAAG ACTGCTGCGA TTGTTTAAGA
2601 TTCTTTTTT TTGCTATAGT GACTAGTAAA ACCTGCCATT TTCAATTATAC
2651 ATAGGCACCTC TATAAATATC TGCTAATTG GCAATTATTA GTAAATTCT
2701 TTCTTCTCTT CCATTTCTC TTCTCTGTT TTGGGTAAAG GAACATTCA
2751 GGATTGCTT ATGTTAAAGT TTCAAGGTTT TTCTCTTCTC TTCTCTT
2801 CAGAGGCAT ACAAATGTA GATGATTCTAT ATTCACCTAT TTCAATTAA
2851 TAAATTTATA ATGATGTTATG TTGTTCTG TTGCTAGAAC AGAGTGTCT
2901 GAACATCAAC ACAAAAGTGG AAGAACCTAA GCTGAAGGTA CAGTATATTA
2951 TTACACTGA AGGGCTTGTG TTGTTGACAA GAAAGGCTG ACAGCTCAA
3001 TGGATCCAT GGAACATGAGA AATGTCACAA TCGAACCCAGA TGATGAGAGC
3051 AGCAGTGGAG AAAGTGTCC AGATAGCTAC ATCGGGATAG GAAATTCAAGA
3101 AAAGGCAGCA ATGAGCAGGT ATGGGGTAA AAATTACTAT GTTCCATGGA

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FIGURE 3A

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3151 AAAATAAGAC AGGATGTGGA CATGGAAAAC AGGGTCTTGA TGGGAAGAAC
3201 TGGATTATT ACAGGTAAT TTGTGATAAC AATGATATTG ATGCTACCCAC
3251 ATCAATCCC TGGTCTGAA ATACAGTGAT AATGTCATC TCTTTGTGA
3301 CTGATTAGA ATTGAGGTTA CAATGCTTT GCTCCATTA ATAATGTGA
3351 ATAATTAA TTATTTAGC CTATTGCTCC TCTTATCTT CTCAGATTCC
3401 TCTTGAATG TTGCTACACC TCTGGTTTC TGAGGGATT CTTTCTCTC
3451 TAAAGTATC CTCTGGCA GCTCACTCAC AACTACTATG GCCTCACCC
3501 CCAAATATAT GGCATATACC CAGGGTGTAA AGTTTCTCTA CTGAATTCA
3551 GATAATTATA TCTGAATGTC TACTGCAAGT CTCTACTGGA CCATTACTGT
3601 GCTAAATTG CCTCAATTAT AAAGTTAACCT GTGAAATGTC TAATACTGAA
3651 CTCCTATCTT TCCCTCCAAA ACCTGCTCT CCTCTAGTAA TCCCCATCTT
3701 AGTGAATAATC ACTGCTATCA TGTAGCAACT CACTAAAAG CCCCAGGTG
3751 TAAACTTGA CCCCCATAGC CAACGGTCAG TCATATCCAG TGGTTTGAC
3801 CTTATTAATG CTICAATAC ACCTACTTT CTGTAACCAT TCTACTGTTG
3851 CTCTAGTTA GGCCTACATT AAATGTGAGA CAGGGAGAGA CCCCAGATT
3901 CTCTCCCTGT CTIACATTTC GCTCTCTCT GTCTAGCCCT CTACACTCT
3951 GCAAGGCAA TCTCTTACAA TTGCAAATTG AATCAATTTC CATCCTTGA
4001 TAAAGCCCTT CTGCACTCT CCAATAGCC TAAGAGAAAAG TAGATTACAC
4051 ACACGTCTGG GCACGTAGG TCTTTGTGA TCTGTTCTTG ACCTGCCCC
4101 CCTGTCCTGT TTTTTCCTCT CTCCCTATTTT GTTACTTGTG GCCTTCACTC
4151 ATTCCTCTCC AACTGCTGG AATCAGTCAC CTGCTCCCCC TTTCTCGTGG
4201 TTGACACCTC TCATCTTCA AGAATCAGCT CAACATCAGG TCTCTATGC
4251 AGCTTITCC AAATTACTCT ACTCCCCAT GTAGAAGTGA CTGCCCCCTCC
4301 TTCAATGTAAC CTCTCCCTGT GCAGATGTTA ATTACGCCAC TACTACAGGT
4351 TAAATGGCTC TGIGGTCTCA CCACCTGCCA CATTGCTGG TGCAATGTGA
4401 GTGCCACAATA GTTATTTGAT AAGTCAATTG ATTCCACAA AAAATGTATA
4451 TCAAATTGTA CATGTTAA GATGCTCAGA AGGAAATTG TGACCAAATC
4501 TAGGCGTGAATAGAGAATA TTGTGCTAA ACAAAAGACTT CTCAATTAT
4551 TTACAACACC CAGGGAAATC CATCAGGAGA AACTACCGTT CTCTTCAA
4601 GTAGCTCAGT GCAATGAACT TTAGGGATGT CGGACTAGAG AGGCCACTGA
4651 GATGTAATT ATAGCAATTCTT CTAAATTAGG TGACCCCTGA AGAAACACTA
4701 GGGTCTAGA AGACAGGGCT TTGGAGTCAG CAGAGTAGTTT GCTGACTTT
4751 AGAGAAAGCTG TTGCTCTCT TGAGCTTCA ATGGAAAATG TAAAATGGCA
4801 AACCAACAGC TGCTTCTCAA GGATGAGATG GTGACCCAGA ATATAGATGA
4851 CAITCAATAC TTITATTAAT CTCTCTCTC ACTGCACTAC CCTCAGTAAA
4901 TTGATTCAA CCTGAGGATC TTCTGAAAG GCATGCACAC AAATATGAGC
4951 TCTGCCGAGG TTGACAGATG TAAAGGGAC ACCCTCTAA GAACTGTCAT
5001 AGTGTCAATT CACTGTATCC TCAAAGGCCA GAGTAGAAAAG AGCATGAATG
5051 CTTTCTTAA CCTCATGCA ATGTTCTCG ACCACTCAC AGTGAATTAC
5101 CTTTATCTC CTGGCTTAA CATAGGACAT CATTGTCAG TTTTAAAT
5151 CAGTTAAAG AGATGGTTT TATCTATGIG TGTTTGGAT TGAACCCCTA
5201 AATGTAATT TTGAGAAAT TCAACATAAT GTTATTTATT GTGATCAITTA
5251 TACTTGTGTT TTCAATACAT GTCTGGTTTG GTATCAAAC ATTAAACATA
5301 CTGGGACAT TTCTCATCTA TTITATACAA TCTTGGCAIG TIAAATGACT
5351 ACAACTCATC TCAIGCCAAA ATAAGAACAT GCAAATGCT CAAAGAAAGA
5401 AAATCTGTT ACTTCAATT TCTCAATTGTT AAAAACTACT ATGGAATACA
5451 GATTTAGTT TATTGATTAA AATAAGGATT CCAGAGTTA AATTCTAGGT
5501 GGCACITTTG TTTTATAGT CCTCAGGCCCTT ATTITAGGCT TCATTTATC
5551 CTGTCATCTC AGTCTCAAC TGIGAACATT ATGTACCTAGT CTTCACATAG
5601 CAGGTACATT AATTCAGAC CATTAAATGTAA AACCAAAAAA GAGGGTGGG
5651 CAGTGGTGG GGGGTGAATG GAAATGGAAA GAGGAACAA CTGAGGCGAT
5701 TGIGCTTCT GTGAGAAATA TGGGGAGAG GCTAGGAAAT GTCTTAACT
5751 TGIGTACTCA GAGCTTATTG TGCTTGTAGT TCTAGAAAAG CACATACAAAC
5801 TTGIGGTGTT CGTGTGCTGT TTCTATCTAC ATCTCATACT GTTTCTTAACT
5851 CTCAAAAGT AACCCCTGCA TCCCTTTCC TCTCCAGATT ATTTCAGGA
5901 TTACCTCTG TTATAAAAAA TACCTGTAC AGATCTCTTA CAATAATTAT
5951 TTCTATTT ATTCTCAAGG TTATTTATT TATTTATTGAA GACAGACAGA
6001 GTTTCATCTC TGIGGCCAT GCTGGAGTGC AATGGTGCAA TCTGGCTCA
6051 CTGCAACCTC TGCCCTCCAG GTTCAAGGGGA TTCTCTGCT TCAAGCCCTC
6101 GAGTAGCTGG GATTACAGGC GCTGCCACC ACACCTGGCT AACTTTTGT
6151 ATTCTCTAGTA GAGAGGAAGT TTACCATGT TGCCAGGCT GGTCTGAAAC
6201 TCCIGACCTC AAGTATACCA CCAACCTCAG CCTCCAAAG TGCTGGGATT
6251 ACAGGGGTGA GCACTGTGC CTGGCTCTA GGATTATATT AATAGAACAA

FIGURE 3B

JUN 12 2003

Docket No.: CL001010

Serial No.: 09/776,705

Inventor: Karl GUEGLER et al.

Title: ISOLATED HUMAN TRANSPORTER PROTEINS...



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JUN 11 2003
TECH CENTER 1600/2305

6301 TCTTCATTA TTTATCTT CTTATCTT CTTTCATGT AGGAAATGTC
6351 CTAAAATTT CAAACCTCA ATTGAAAGC ACTTTAAAAA TCATACATAG
6401 TCGAGCAATT TATATAAAA CAACTAAAAA GTCTGAGACA TTTGAGTA
6451 TAAAATGCA ATGGCAGCAG CAGGCCTTAT TAATTGAGCC TCTGGAAAT
6501 GTGGCTGGTC CTAGGCTCGT AGCCTAAAG GCCCTGGCTT GTAACTGCAG
6551 GAGCTGACCA GCACGCTCT ATAACCAAGT TGACATCTT CTAGGCTGIG
6601 TCCAAGAAAA CCAGAACAC AAGCTCTGT GGATAGTGAC ATCTTAAAGT
6651 TTTCTTCC TCCAACCTCT TTGAGCTT CATTTAATG CTTTAATAAT
6701 TTCCCTAGTT TCATTCTTA TCTGTTATA ATCCATGTAC ATTTTGAGAG
6751 TAATTTAAAC ACATACCCAC ACACAGAAAC AACCACACAA ACACACAGCT
6801 ACCACTGAAT TACCTTCCAG TAAGAGATGT ATGTTATAAT GATTGTTACCA
6851 AAAAAAAAAGAAGAAA ATACCAAGCTA CAGGGCCCTG CCTGGGACTG
6901 CTTGATGCCA GGGGAGAAT GGGGCTCCCT CCTGGGTATG GGTCGGGTATG
6951 GGCTGCTGC TTCACCTTC TGAGCCACAG TTCCCTATAG GGATATTITG
7001 AACATCAGAT GAGATAAGGA TCACAGTGCC TAGGCATTAA ATAATATTC
7051 GTTGAATTA AAAAACTCATC TGATTATGGT ATGGTAGTAG TTCAAGAAAAT
7101 TCTGTCATAA CCCTGTAAC TTTCTTGGAG AGGGCTCTAA ATGGGAACAC
7151 AATTAGTTGT AGTCTCTTGC ATAGCTAATG TGAGAAAGAG GGAATGTTG
7201 ATAAACAAATT TTCTTAACAA AAATAATATT TCCCTCTT ATAACATCT
7251 TCTTCATCC CAAAGTATAG TTGAAATGG AACTCAAAAT TGTTGGCTG
7301 GAAATGACCGT TAGTGAGAG GAGGAAAGA AAATGGGGT GCTTATTTTC
7351 CCCTCCCTG ATTCACTTAC TTAGATCACC TGAAACATAC ATATGATTC
7401 GAGCATATAT TTAGATGTT TCACCTTCIT ATTGTTGIGT GTGIGIGITC
7451 AGTCAATTG CTAATGAAGA CACTGAAAGT CAGAAATTCC TGACAAATGG
7501 ATTTTGGGG AAAAGAAGC TGGAGATTA TGCTGATGAA CACGTAAGTG
7551 AATCTATGCT TTCAGGCAAT AAACGGGACT GAGGGTGTCT GATCTACCA
7601 GGTCTCTGIG GGAAACAAAT GTGAGCAGAA TTTCCTAACG CTGATCAGC
7651 ACATTCTGIG TTATTCAGG CTCTTACTGG AATAAGGGCT TGTTTTTTC
7701 TGTTCGCCAT ATGGCTGCAT GAATCATTTA TGAAACCTTAT GTGTTTGGG
7751 GGGAAATCATC TCTAACCCAA AGGTAACTCA CAATCATACA TGTTTCCCT
7801 TCTTTATGIG ACTCCCTTG TAATTTGTT TTTTACTGAG CCTCTGCTG
7851 AAACCAAGCA CTGCAATTCCG TTGAAAATTAA CATGTTTTTA TTGATGTTGA
7901 GAAATGCTT TACTCTGTTA ATGTTATCTT AGTCTCTCAAT TTGAGCTG
7951 AATCTGAGA TAATGAGA ATAAGGATAA CCCCTAAAGG TATGCCCTT
8001 GGCAAATGTT TGCTTATAAT ACATCCCTTC TTTCCTAACG ATCCCCGAAAC
8051 CACTTCCTT GGAAATGCTT CATTAAACCT GAGTAATGCC ATCATGGCA
8101 GTGGGATCTT GGGCTGTCCT TATGCCATGG CCAACACAGG GATCATACTT
8151 TTATGTAAG TGAATGTTA TGCTTACATT TGTTGATGAA GTCATGCT
8201 ACCCTGGTGGC TTTCCTCAATT AAACATCTCA AGTTTGTCTT TTGTAACGT
8251 GAAGACTCAG AGGGGCTAA TCACTGGCACT TGGTCACCCA ACCATCCCTA
8301 ACCCAACGGC AGAAATGTTA TGTTGCTCAAT CAACCAAAGT CCTGGAGCAG
8351 CCTGGCCAGA AGAATTTGT TATTCAGTAA ATACTGAAA TAATTTGGTG
8401 TTAGCAACC AAAAGATCT TTCCAGAAG CAAATCTGAT TTATCTCAT
8451 TCTTAGGAAA GAAGCAACCA AGCTTAAGAG CCTGCTCATGC CCTGGCTTAC
8501 TTATGTCCTT ATCCCTGTT CCCCTGTCGG ACAGATACAC TGGGCACAAT
8551 AGCCTCTCT CCATCTATG AAGATGCCAC ATCCCTCTC ACCAATGGAC
8601 TTTCGACAT GGTCTGGAA CCTCTCTCTC TTCCCTCTC ATCTAGTTAA
8651 CTCCCTATAT GTCACTTCAG TCTCACCTGA ATACTGGGG CCTGATCTC
8701 CATGACTGGG GCAAATCACC TTATCATAAC ACTCACACAA ATTTTAATGT
8751 TTATGTCCTT TTGTTGCTGAT TCATTTGGTT AATATCTGTC CCTCTGCTG
8801 GACTATAAGC TCTAGAAAGT TGAGCCCAAGT TCCTGTTTTA CTCACCAATG
8851 TCTCTACCTC CAAACCTAGA GCAGTGCCTG GTACAGGCAA TATTGTTGA
8901 GTGACCAAAC CTTATTCCTA AACCTACGTA CTTCACCAA ACTTGTCTA
8951 ATGCTGCTTA AGGGTAGCAG CACTGGTAG TTGACCTGTA GGGTGGATAC
9001 TGCACTGCT ATGACAGACA ACAACAGACG TTATGTCGA TCACTGACAG
9051 CCTGGCATTTC TCCAGGATAT AGTGGCAGC AGTGGAAATTTC TTCAAGAAA
9101 TAAAGCTGTA TGTTAGGCAC CACTGTGGAC ACAGATCCTA ATCCCAAATG
9151 CAAGCTAGA GAGTTAAATA ACTGCTAAG AATGCAACAT TTATATCACA
9201 AATATGTCCTT TTGTTGCTT TGAATATCAC ATATGATTAG TAATCACACA
9251 GCTTATGAG GGCTAAGCAT CAGGACTATA AATATTTGTA TTGTTGAGT
9301 GCTTATGAG AACTCTTTA TGTTAATAT TCTTCAGCTG ATGGGGTTT
9351 TATATCAACT TTACTTTAT ATAAGCCATG TTGAAATAA AACTAGGATT
9401 TTAATAATCT GAATTTAAT AGCTATGTT AGTACATAT ATTTGATGC

FIGURE 3C



JUN 12 2003

Docket No.: CL001010

Serial No.: 09/776,705

Inventor: Karl GUEGLER et al

Title: ISOLATED HUMAN TRANSPORTER PROTEINS...

9451 TTTGTAAATG TGCTTACCTC TAAGACAAAA AAACCTGCCT TTCCCTTATAA
9501 ATTATACATA CCATTAAAAT GAATTAGGA GTTACAGATC ACTGATGAT
9551 AGAAATAGGA AAAACTTCCC CCAATCCAC AGTCATAGAT CATCTTCATG
9601 AGAGAAGAAT GTTCCACTTT TTTAAATGAG GGCTCTAATT TAGGCTTATA
9651 AACACTTACG AGATGAATT GGTAGAACA ATTAAATC TAAACATCAT
9701 GGGGTGIGTT TTGTTGIGCT AAGTAGGCCA GACTGGATTAGCCTTCT
9751 CTTAAATTAT ACCAAGTGAC ACAGTATTAA AAAGGTTTTA CTCTTAGAT
9801 TTTCTGCCAG AAAAGTACA TGTTTAAAGT ACAGGGATG CTCAATTATTT
9851 TTTCAGGGAA CAAAATTATA TAATCTGAAT TACATTAACTC CTAAAAACAA
9901 GTTAAGTTC AAGGCTATAT GAAAAAAATAT AGGAATAAGT CATGGTTAG
9951 ACAGTCTGG CAAACACTAT CTATGGAAAAA TAAGAGTCC ACATAGCTAC
10001 AGGGGTATAA AAATTATATAA TTCACTGGTC AACATGTCAT TTGTTAGTATT
10051 GATTICATIG GAAATTACCA AGGGATTAGA TCAATTGTTG GAAAAGTGTAA
10101 TTTTTAAAAA ATAAACAAAG ATAAGATT TTTTCTGAA TTCCAGGAA
10151 AAGGCACCT TGCTCTCC TTTATTACGT AGATGCTCTT ATCAACATC
10201 TTATTTTGTG GCTCCAAATC TTGGATTGG AAAAATACCA ATCCGTTAA
10251 ACATAAAAGAA ACCATACATG CATGTTGGGA TCTAACACCC AGAAATGACT
10301 CTGAATGCAA AAAAAAAAGAAA AAAAAAAAGAAA GGGAAATTTC GTGCCCCATC
10351 CTTAGCTTTC TCTGCTTCTCT CTATTATATA TGCACACTCC TGCCCCCTCA
10401 TCTTACAAAG TACTCTGTA TCTAATGCAC AGGATCAAGA GTAAATGCGC
10451 TCAAGCTGCA TGCTTGGCC TTGGATTCC TAGATTTCAG ATTAAGGTTT
10501 AGTCAGGCTA TTGAATAGCC CTTCAAITCT AAGTGCATG GTGAATATCA
10551 TCAAATATG ATGTACATAT TCCCATGTC TGAGTAAGT GATGTTAGCAT
10601 TTGCTAATGT TGTATACAT TTGACATCTA AGTTATGAAAC CAGATTCTAC
10651 CACTGGTAA CTTAAAAAA AAGTTAGGA CTTCAAGT GTAAAATATA
10701 GCAAATTCIA TTCTTAGAC TTAAAGGGT ATGTTAGAG TTCTGAAAAG
10751 AATTTCICAG CCTCCCCCAA ATCCACATAC TTTTGGAAAG CTGATGATG
10801 AAAAGATTA TGTTGATCCT TATTGTAACA TCTAACATAA TTACATTITA
10851 TTATTTGTAG AAACTTTATT ACCTACTCTC TCTTCCCTT GCAGAAATCAT
10901 GCTGCTTGTGTTGCAATAT TATCACGTTA TTCACTTCAC CTTAGTTCAC
10951 AAACAGCCAA CGAAGGGAGT ATGCTACCC TTTAGTCCAA CACATTCTAT
11001 TTAAATTCTC ATAAAAGAGT ATTTCTGCT GTGCTCTTAC TACCTTCTG
11051 TGATTATAGT CAGTTTCACA TTTCATTTTC TTCTGASCCC AGTGACACCA
11101 TCTCTCAGT TTATATAGTG TTGGCAAG TGAGGCCCAG GAGTGAAGA
11151 CAACTGGCTC AGGTCAAGA CAAATAGAAA AAAGAAATT CTGATATATG
11201 ATAGAAATTA CTGTTTGAC TTGCTACATG CAGCTTAAAT AAATAAAACCC
11251 ATGATTCTT GTTGGAGAA CATTTCGATA TATTGCTTAT TGGTTTIGA
11301 GGTGCTCTT TTGGGCTT TATTTCTAT ATGATGTTA TTACATGTT
11351 TGAGACTCCA GCACTGGATT ATATGACAAA AATATTTAG TCACTAAAC
11401 AATCTCTTAA ACAGGGCTAT TTATCTTGT ATGTTAGGT TTCTGATTAA
11451 TGAAAATTA CGAGAAAAGG CATTGGATG GCGGGGAAAA ATGGGACCTT
11501 TTGTTCCAT TACAATGCCA AACATTGGAG GTAAAGGGAT ATACTTCTCA
11551 ATGGATCCCA TAAACTTCTC ATAGGGTGTGTTTAAATGTTTAAATGTT
11601 GGCATAAAC AGGCACCTTA GATACAGAAA ATGCTACT TATAGTTCT
11651 AAATTTAAA ATGATAGTTT CTAAATAGG TTGTTGCTCT GCTTAAATTA
11701 AAAACAGCAA TATCTAAGA TGAAAATAAC TATAAAACCC TGCAATTGAA
11751 ATCTAGAAT TAAAATATAA AATAAAAGCT TTCTTGTATT TTAATGTTAT
11801 TATAGCAIGA ATTATTACTC TTAAAAAATG AAGAATTGTT GCTTAAATCT
11851 GTCAATTGACA AACAGTGTG CGTTTCTAT GTGTTGACTGA GTTGTGATTAA
11901 CTAACACGAA AGTGGGGTGT CTTGGGGAAAC ATAGCCAAAT GCCTGGGCTC
11951 TIGAAACCCCA GCTTGCACCTG AGCCAGGCCA CTAGACAGT CTCTCTGGAG
12001 TTACTAAGG CAAAAGCTG CTAGGCTC AAATGCACTA TAAACCCCGG
12051 TTGTTGCTT CTATGGATC TTATAATTC CACTGAATT TCACTTCTCAG
12101 TGTTAGGACCT AGAAATATAT ATATATATTIT TTAACAAATG CTCTCTCGT
12151 GTGTTGTTGC CCACCACTT CATACTGTTT CTTGTTGIGT TTGGGCCCT
12201 AGAAGGCATC CAAACCCATA TTTCAGATGT CCGTGGGGCT GCTTCTGGC
12251 ACATGGCCCC AGCCATCTCC CGACATAATG ACATCTACTC CCTCACCTCC
12301 TACCCAGTCC CTAACACCTG TATTCTTATTT CTCCTGATCTT CTCTCTCTCA
12351 TGTAAATCCA CGACAGTCA TCCAGTTCT GAGGGCAGAA ATCTGGGATGTT
12401 CAGCGTAAAT GTTTCCTTTT CCCCCACTCT GCACTGTCCTA TCAAAATGCCA
12451 AAGTCCTGTC ATTGATCTC TTACTTATCT CTGAAACCTC TCTCTCTGTT
12501 CGTCCTCAT GACCACAGAT GTCACCAATT TATAGCTCAG ACTATTGCG
12551 TAGTCCTCTA ACTGGCTCTC CTGGCTTCTG TTTCCCCCTG TCTCAGATAA

FIGURE 3D

JUN 12 2003

Docket No.: CL001010

Serial No.: 09/776,705

Inventor: Karl GUEGLER et al.

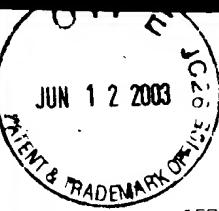
Title: ISOLATED HUMAN TRANSPORTER PROTEINS...

12601 ACTCTAACTT GTCTCCAGA TAAACTTCT CAAATTGAG TCCTTCTA
12651 CTTTTGTGCT GCATAAAATT CTTCAGCATG CCTTTTATTT TTCTAAGGAA
12701 AAACCTAAAC TCATGGACT GACACAAGAT CTCTGCTAG TTCTTCTGCT
12751 CAATCTTCT AAACCTTCT AGGAATGCC ATATCTATCT ATCTTATCT
12801 ATCTATCTAT CTATCTATCT ATCTATCTAT CTATCTATCT ATCATCTATC
12851 AATTATCCA TCATCTATAC CCTACATGTC CTGTGTCAAA CCATAACAA
12901 TTATATTTAT TCCCCTAAC AATTTTTAA AAAATCATCC
12951 ATGCCCTCTT TTACAGGCT ACTTCTCCC TTGACTGTC TCTCAAAGTC
13001 CTCCAACCT AACACACAGG CACACACACA CACACACACA CACACACACA
13051 CACACACATT TTCTCTCTCA CTCTGCTCAC CTGGCTATT GCTCTCTAG
13101 ACTGGTAAAT ACTAGTCTCT CTGGGCTCTC ATGGTCTCTG TTGTATCTAG
13151 TATGTTACTG TTCTCTAAAG GATATTAA AACACTTGG TAGAGAATAA
13201 CCTTTGGAG TCTGATGGAC CTGAATTGTA GCTCTCTCT GTCACATATCT
13251 GTGAATCTGG GAAGATCACT GTACTCTT GTCTGATT TTCACTGATA
13301 AAAATTACCT TACAAAGGCT ATTGTGAGGA TGAATAAGG TAACATATGG
13351 CACATAATAA GTGTTCTGTA TATGCTTCTC TCTCCCTGG TTCTCTGCTT
13401 CCATATCCAT GTCTCTGGAG TTGCTGAAT TATTTTTAA ATAGGCTTT
13451 AAAAATTAT AAAACAATAA TATGATGATT GTGAAAAACT AAAACACTGC
13501 ATAATATAT AAATTACAA GAAAGTTA TGTCAGTCAT CCTCAGAAAT
13551 AACTACTCAT AGGTTTCTCC CTATGCCAA TTCAACAAAT ACATTGAATA
13601 TTGTTAGTAT TGGATCATCT TATGATACCG ATTTCAGCT TTCTTTTAA
13651 ATTTACAAT ATGCCCTGAA TATATTGCA TTGTTATTCTT TTAAATGATT
13701 TTGAGGTTT CCTTACACA AATGTGCCAT AATTGTTA CAGTATCTT
13751 ATTGATGAAC AGTTGGATTG TTCTAATTT TTCACTGTTA TAAAATGCT
13801 ACAGTAAATA CACTGCACA GAGATCTGC AACAGGCAA CCCATTAA
13851 TAAATAAATT CACTGGAGT ATCAAGGATT TCTGGAATGC AGAAATTCT
13901 TTAGTAAATCT ATCTAACTAT ACTCACCCCTG ATAATGGATA GTGGTAAGC
13951 AGATAAGTAA AATTCAAGCA TATCTTATGA TTGTTGTTAA AAAAATTAA
14001 ATATGTTAAG ACTACAATCT TGGTGAAT TTGACAGTAA TATCAAATT
14051 GTCTCAATTCA TTTCATGGT TTGAGCCAT ATGCATAATTA GCCCCCCTAA
14101 TCCCAACAAA TAGACCACCT TACATTGTT TCAAACCTCTC AGCCATATCA
14151 AGGTTAAAG TATGGACCAT TTCTAAGGAT TGCCTTATAG TTGGTCTAAT
14201 TTAACAACTG AAATAACCG GCATAAGCAT AATTAACCC GGAATCAAGA
14251 AGTTGAGTGG CAGCACCTCA GCTGTGGTTC AAAGCATAGC CACTACTACG
14301 CCTCTAAACA ATGGAATAA GTATAAGGG GTCTCTCAGT CAAGCCTCAC
14351 ACAGGTAAGA GGGGTGACTT TAAGGGAGTA AGATGAAATA TCGTAACATC
14401 ACCCCAGAAA TAATGCTCTC ACTTGGTTA TTGTTATTGAA TTGTTGATA
14451 TTGGATCAA GAGAAATCAC TTGTTATTCTT CTATTTAAC ACTCTACATT
14501 TAGAACACTT AATTCTCTCA ATCCCCTAAA AAATTAAACAT TTACTGAGA
14551 TTGTTCTACA TAAACAGATT AATGTCIGGA TCAATTGAA TTGTTGAGA
14601 CCAAACATGT TAACATCACT GACATCACTG AAAACCCAGCA ATTAATAGCT
14651 GTAACATGAA ATGGTACCTC ACCAAGCCAG CTAACTGAA ATATCTCTG
14701 TGTTCACACT CTGTAAGATT TAGCTTCTGCA CAAGGCTTGC GCAAAGATA
14751 ACCAAATAAT GTGTACAGAA GGTACATCG CTATTGTTAA AATCATTTCA
14801 TTGACAGT ACAGAAGAAG CACCAGCCCT TCCTGTTTAG ATGTTAGTCG
14851 TCCCTTCAA GCTGTATGAT TTGTTGACATG TCAACATTAAC ATCTCGGAGT
14901 TTATATATCT TCATCTGGG AATGAGAATA ACAACATATA TCTTGTCTC
14951 TCACAGGGTT TTGAGTGA TCAAATGAAG TAATGTGAG AACTAACCAA
15001 TGTTGGGAAAT TATTATCATC ACTGTTACCT TCAATGAAG TGAAGAAAAT
15051 ATTTTAAAC TCAGTAGTTT AATTTAACAT TTAAAGTATGT TTGTTAAAGT
15101 GCGTGTAGC AAAAATTCAC TAGAAGGATG TAGGACACAC TTAAAGTTT
15151 CATGTTAAAT TTGAGGTTCT TATTTTAAC TGAATCTTGC GGCATGTTG
15201 CAACAAATTG ACGTTATCTC TCACCAAATG GTGGGGCTTG AAAAAGGGT
15251 GATGCTAAAT TATTACAGT TGAGGCAAAT TTGTTAGTATG TATGTTATG
15301 AATACATATT CATTCTTCA GGGAGAAGGC TTGTTAGATT CATCAAGAAA
15351 TCTTTCACAA GAGTAGATAA TCATTCTATG ATCACTTACG TAGATGCTCA
15401 TGAAATTGTC CCACTTATAA TAATTCTTA GTAGCCAAA AGGAGAGTAA
15451 GATGAGGAGG GGGGAAAAAA AAAACTCTT TGACAAAGAT GGAGAGAAGC
15501 TGTCACTCT TGTATCTTGT TATCAATCCA GGAGGCTTGC GGGTTTGACA
15551 ATAAGTGGTC TGAGACTTGT TGACTCTC AGATAGGTC CGGAGGACTA
15601 GATTGGTGC CATTCTCAGA AAACCAAGGG GGATATAATG ACTCTGAGA
15651 TCTGCCCTT GATTCTGCA TCTCTCAGCT GGGCCATGCC TTGTTGAGC
15701 AGACTACTGC CCAAGTTATA GACACTAACAA CAGGCACACT GAGTATGGC

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JUN 17 2003
TECH CENTER 1600/294

FIGURE 3E

JUN 12 2003



Docket No.: CL001010

Serial No.: 09/776,705

Inventor: Karl GUEGLER et al.

Title: ISOLATED HUMAN TRANSPORTER PROTEINS...

15751 TATGTTGATT TATAACTAAT GAGGGCAGAA CCTTAGAACT GCAGCTTCAC
15801 TGTAACCTT GGAGCAGGAT TTAACACAGA ATCAGCCCTG ATACTGTTAA
15851 CAAAGGCTCA CCTGAAAGAG CTGGAAGGTC AAATGTCTAT CTTGGAAGAG
15901 AACTTGAAG CAGTGCACAA TACACAATGA CTTTTTTTC CATTGGGGG
15951 ATTAGATGTT CATCTTACAT ATCCCAATG TCATAACTTG CTTCATGIG
16001 ACTTCAGTAC TGTCACACC ATTAAGCTGT CACATTTCG ATTTAGCAA
16051 TGTCAGCTA CCTCTTATC ATTAATATG AACTACCTGA AGTAATCAGA
16101 GCATTCACTGG GACTGAAAGA AAATACTGGG TATGTCCTAT GCTCCCTCTG
16151 TGACATCAAG TGACTCTTAC TACTTGGTCT TTTCATGATC TAATATCCT
16201 GTCCTCTACT TCTAGAGAAAT GGTACCTCAA TGGAACATAC CTCATCATAT
16251 TTGTCCTGT TGGAAATTCTT CTTCACCTT CGCTCCCTAA AAATTTAGGT
16301 AAAGATATTT TCTAATGGA AATATTTTTA TTTCATTTTC ACATTTAAAT
16351 AGGTTAGCTA ATTGTAGATG CCATATTCAAC CTTCACAAAT GCTTCCTCTA
16401 ACTTCAGT TATCTGGCT ATACCAAGTGG ATTTTCCTT ACCTGCATGG
16451 TGTTTTTGT TAGTGGTGA AGTGTGTTA TGACATGATC CTTCAGGGT
16501 GGTAGGCTATG AGTTTTTTC TGCTTAAATT AGTGTCTCA TTTCAGTCAA
16551 GCACCTCACT AATAATGAAAT AGTCTTGTAA TCACAAGTGA TTTCATGTA
16601 GACTAATTTA GAGCAAAAAA AGAGCAGCTA CGATTTAAAG ATAGTGGAGG
16651 TAGAATATCA AAGCTACTAC TAATGGTTTG GCTAGGCAC ACTGGTTATA
16701 TATGGGAAA AAAGGAAAAC TTCAACCGAG AACATGACAA TAATCTGGCA
16751 TTTCAGACAG CAGAGGAGAG TCCAGATGA GAAACAAGAA GGCTATATCC
16801 ATATTCACAT GAATCAGCCA TTCTCTCTTA CACATCCAC CCATTAAGAG
16851 AGGACAAGAA CAGTGGGATT AAAGAAGAAA TCCCTCTCTC TAGGCCCTG
16901 ACAAAAGAGG GAATTCTTG CACTATCATG AATGCCAAA TTATATAAGC
16951 ATTTCCCCAA AGAGGTAAG GAGAAGGAAA AAAAGTTTG AAGACCCATG
17001 TCACCTTGT TTTAGAAAT AAGGAAATGA TCATCTTCT CTTGGAAAGGG
17051 CATGAAAGAG GGTGGGAGG ATTCTTGCAA AATATTGTCC TGTTAACTCT
17101 AAGAGCCAGG GCTGCCAATC ACAGCTCCAA CTCTTCCCT AGAACAGAGG
17151 CTAGAGGAAG TTTCATTTGT CCATTAGTCT AAAAGGAATC CCTAACTGAG
17201 TTCCCTCACTC CCCCCACCCCTA TAAGCCACAC ATATGGATTC TTATTCATT
17251 GTTTTCTCTC AAAAGCTGA TTTCATTTATG TTTCATTTATG ACTGAGTCTA
17301 GGTTGTTTAC AAGAAATTCC AAATACCCCTG CCCTCTTACCT GTTTGGATC
17351 ACAGTGTGG AAATCTGCTA TTCAACAAACA CGCTTCCAAAT GCAATGGTA
17401 ATGTTACCCA ACAAATCTGA GAGTTCTGAT GTGAACCTCA TGATGGATTA
17451 CACCCACCCG AATCTCGAG CGCTTGTGAA GAACTGGGCC AAGCCCTCTC
17501 TTCAATGACAG TGGAGTAGAA TATGAAGCTC ATAGTGTGAA CAAGTGTGAA
17551 CCCAAATACT TTGTTGTCAA CTCCCCGGTA AGTGTGGGGT CGGGCTTCT
17601 AATGAGTACA GTTATGTTGTT TTCTAAGTTT TTATCAATA AACTGAGATG
17651 GCGTGGAGTC ACCATCTATG TTGGATGCT AAACACTGG TTGTTGCTT
17701 GTTTTCTAGA CGGCCATATGC AATTCCTATC CTAGTATTG CTTTGTATG
17751 CCACCCCTGAG GTCTCTTCCA TCTACAGTGA ACTTAAAGAG TAAGGCAGCC
17801 ATCATTTTAC CATTCTAATT TGCTTGTAAA TTCTGCTCAT ATGTTCAAAG
17851 ATTCCTTAAC AGGAAACACA GTTATAGCT TCTCTCTCAG AGAAAATATG
17901 TACTCCATCC ACTCTCTAGT AACATGCTTT AATCAGAAAG GTGGGAATCA
17951 GOCACCCACA GCACCTACCTT ATCTCTTCTC TCTCTTCTC CTCCACCTA
18001 ATGGTTCAAGG GGAGGGTTT ATGGCAGGTG GACAAGGAGT CGATGGTTG
18051 AATAATTTCG GCAGGTGTG GGAATTAAA TTGAAATTGTT GTTGGAAAGA
18101 AATGATGTC GCTGGACTAG AAATGAAAAC ACCCATGAG ACCAAAACCTT
18151 ATGGTTAGGG GCACCCCTGAG TAAGCCAGTG ATGTCATTTA TAGTCAGGCAC
18201 CTAACCCCTG TCTACAAACAC ATTCAATCA AGAGATGTTG CAATATCTG
18251 CCTTTGTTGT CTTATTTGTA CAATAGAGTC ACTGGCTAGA AAATCTTGT
18301 TCTTCAGCT GATGCTCTAT GGTCTATTG TATTCCTTTC CCTTGTAGT
18351 TGTTGATATT TGCTTGGGAA CAAAGGATAT GAACTCTTA TAGCTGTTT
18401 CCTCTTCTCT TTAAGGGAGG ATATTATATA ATAATTCTCA ACTTCTTAA
18451 TCTAGACATC AGTAAACCTCA GTCCTCTTAC TCACTAAATA GCAAAACTT
18501 CCCATTAAT TCTGTTTAC CTCTAAAAAA ATTCAAGAAC ACTTTCAAGT
18551 ATTTGATGT CTTGTGTTTA CTTGTAAAAT TACATGTTAGC AGTTACTCCA
18601 GAAAGCTGAC AATGATCTT TGGCAGCCAG GTTCTCTCTA GAAATGGTTT
18651 CAGAGCTTT TCAGGTAGTC TGGCAGCTG GCAAGTGTAC TTTCGCTACT
18701 CTACTAGGTT CTTCCTCTA TTAAAGTCA TCTCATTATG AAATGAAAAA
18751 GCTTCTATG TTAGGAGCT GTTCTATCTT TAATGTTAAAT ATAATTCTTAT
18801 TCAGTGGCA AGCTTACTGA CCTACGTGAA ATAGACTGTT CCTCTTCTAG
18851 GGAAATGATT GTTTTAAGA CTGAAGGACT AGTGTGTTAAG AAAATGGAA

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FIGURE 3F



Docket No.: CL001010

Serial No.: 09/776,705

Inventor: Karl GUEGLER et al.

Title: ISOLATED HUMAN TRANSPORTER PROTEINS...

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18901 ATGAATCCTC ATTAGCTCTC TAAGACAAAT TAAATCAGC TATAAGTTA
18951 TGTACTAAAT ATGTCITCAT GATTAGCAAT ATAGATATAC TTTTTTATTA
19001 TTATTTCAT TTGAAAAGT GATTTTTTTT TGTAGTTA AAAAACAAAG
19051 CTTGGITC TTCTCTTTC CAGTGGTCC CGGAGAAAAA TGCAAACGGT
19101 GTCAAATATT TOCATCAOGG GGATGCTTGT CATGTACCTG CTGGCCGCC
19151 TCTTGGITA CCTAACCTTC TATGGTAGGT CACTCTGAAA GTCAITCTC
19201 ATATGCAAAT CCTGTTAGG CTGGCTCTTG ACCCTGGTAG GTATGTTT
19251 TAAAATTCG CTCTCTAAAG CATGCTCTAT AGATGACACA TATTCATTA
19301 ATATACTATT TTAGTTTGT CACTGACCT GAGGAAATGG GGGCTGATTG
19351 AGCCCTGGCTA ACAATGTTACA AGAATTGIG AATTAACACC TATTTTATAA
19401 AAAATATCCC TCAAACAAA TTATTTCTC CTAGGGATAG ATGATATTTC
19451 TCTGGCTAGA CTCCATAGTC CAACTCAGGC TACAAGTGT GAGAATGAAT
19501 CCACCTGGCAT GTGATAAAGC TCTTGTATG GAATTATTA CGGCCACACA
19551 AATAGCAGG AAACCTGGCAG GTCTCAAGT TTGAATTTCG CTCTCTTTA
19601 CCAGCTCAAGT CAAATCTGGG AGCTTGGGAC TTAGGTAAA ATTCTGACA
19651 TATCCATTTC TATTTGTATA TACTAAATGA TTCTCTAAGA AAGAGGACAT
19701 GACAGAATT CCTCTAACATC AAGAATGCAC CACCAAAAAA AAGTGACTAT
19751 GGCTCACATTA GATTATGCT GCAACATTTTC CTCTCTGCA TCTTAACAGT
19801 TCACAAAGGG AGTACGGATIG TACTCTTCC ATGAAGTGTG GGGACATAAA
19851 CAGATTTCAT GGAATCACAT ATTGACCTGG TAGCATATGT TTACATGAAT
19901 CAGIGIATCA ATATAAATAT ATTCTTGAT AAACCTCCCT TTAAAGTTT
19951 TAACTTAAATT TTCTTCTTAC TGACTTGGTA AATTGAATTG CATGTATGAC
20001 AAATTGTGGA GGAAAAGATT CAGGAGTAGG CCACCATTTG TTAGGTTTT
20051 TTCTCTATTT GACTAATATT TGACTATTAA CCAACATGT GTCTTAGATT
20101 GGGCATTAAC TTCTTGGCGG TTGTGAAATA ATGAATGACG AGGTCAATAC
20151 TACTGAAGGT ATTTCCTACTA CTCTTGTCT GATCTTGAGG TGAAAATCCA
20201 ACTACGGCTTG ATTCCATAGA TATTTCTTGT TTATTTGTGC TTGGAGTCCT
20251 GAATGAAGGT TTCTCTAAGT AGGGCTGCAT CTCTCTCTA GAGTAGTACCC
20301 CACTGGAGA CCATCTAAAA ATTATACATAA TTATCTCTTG CACGTACIT
20351 ATACTTATTT TAATGAGTTT CATAAGACAA GCAAAACIT GAAAGAGCCC
20401 AAAATATCTC TTCTTGTGTTT GGIGATGGAG TCACTAGTTGT TGAGCTGAA
20451 AAAATGGTAG CAATCATCA TTCTAGAGT TACACACTGG TTCTGTAACC
20501 TGACATAGGA GTGGCTGCAC AGGTAGGGAC AGGGGAGGTG GTAGGCTGGG
20551 AGAGACAATA TGCTGGGCTT GGGCTCTCA TCCCCTCAA CAAGAGCACC
20601 TTGGCTCTG TCTGATTGTT AATTGCTCT GTCAGCGGA GATAGATTAA
20651 TCACAAATGTA AATGAGCTTG AGAGGCTCT TATTTGTAT TATACCTCT
20701 GCAACGTAT CAGCTCAGG ACCTCTTGT TCAATTGAAT GAAGGTGCA
20751 TAGCTAATGA GCTCAGGGC AAGACCAGAG GTGCCCTGGAT TCCCAGGCTT
20801 AGGCTCTTC CTCTGTCTG TGTCTCTCT AAAAAATGT GGCATAAGIG
20851 ACCCTGGCTG ATTTCACAAAC ACCAACGGGT TTCACTCTCT TTCTCTGTT
20901 GTAGGAGAAG TTGAAGATGA ATTACTTCAT GCCTACAGCA AAGGTATAC
20951 ATTAGACATC CCTCTCTCA TGGTGGCCT GGCAGTCTT GTGGCAGTAA
21001 CACTAATGT GCCCATATGTC CTCTCTTCAAG TAAGTACATA AGACTTGT
21051 GAAAGAAC TACTTGACCC CATAAAATTAG TACATGTGTT CTACCTCTAT
21101 TTGATTAA TTATAGGGTG AGTTGCAAT TGCATGCTT GAGGATAITA
21151 TTCTCTATA GCATTTGAG TCACCTAAAA TTGGCCATTAAATGTGAGA
21201 TAGAGGAAGT AGTTTCTGGT GGTAATTGTTA TAGTGTAGGA AAAAAATCAT
21251 AAAACTTATT TTCTAATCTA AAGTGAAGA GGGGAGCTGG AGCTTCCTG
21301 TTGTTGATTAA GTAAAATGTA GTAGGAGTTC ATATAACTTT GGAACCTTGA
21351 AAGCCAAAAC CATATTAACT TTCAATCTT ATTAAATTTTC ATCACAGTTT
21401 TGAAGGCAIT TCATTTTGT TCCAGTTGT TGCTGCAA TAATATACAA
21451 AAGTTCCTT TTCTAATCTG ATGCCCTGAA GGCCTAATGAA AAGGGGATTC
21501 ATGTTAAGTA AATTATATAC CAGAAAAAAA TTCTCTAAA AACAGTTATG
21551 CTATCTATCA CATATCTCTC TCACACATGG CCTCTGCCAG ACTCACACCA
21601 GGTCAACCTT CCCTGGCATT TGCTCATGGT GTCACTTGT TCTGAGATCC
21651 CAGAGGAGAG CTGGTAGTGA AGATTGGGC TTGTGAGGT AAAACCA
21701 CCTAAGGATA AACACAGTC TTCAACCTCC TCCAGCTCC TTGTTCTATA
21751 ACACCTGAAIT TACTCTATCA TTGAGGGGG AAAAATATAA GTGACACAGT
21801 AACCAAGCACT GTCCCTGGACA TAATGTTCCA TACAGGGCTG GCATATGAAG
21851 ACTATTTCTA TAATGACACT GTGGTCACIT TAAATGCAGC TTGIGGCTG
21901 AAATATATTT TGGCACATT CTTCTCTG AGTGCATGAA ATCAGATCCG
21951 TACTCTATG GTGGCTAATA TTCTCTCTT AAATCAITGC TTGCTCTAA
22001 TATATCTGAA AGTATTCAG ATGACATACA CATAGCTTTA GCTAAATC

FIGURE 3G



Docket No.: CL001010

Serial No.: 09/776,705

Inventor: Karl GUEGLER et al.

Title: ISOLATED HUMAN TRANSPORTER PROTEINS...

22751 AGCTCCGTCT TGGGTACAAG ACAGAAGACA ACTATAAACAA GAAGGTATAC
22801 GATAGGGTAA AATGCCAGG CAAACAACTT CACTGAGAAA AGGATATCTG
22851 GAGCCCTCT TTTTATGTGT AAAAAAAATCA CTCACTAAAT TTTGGCACAG
22901 TGTAAGCATT CACATCATTC TAGAATCAA GCATAAGAAA TCTGTGATGT
22951 GCTTCITGTAT TGCITTTATC ATATTCATAT AGTGTITCA AGCCATGGTT
23001 TTAAGGGATT GCGAGAATTC GCGATCGTCA CACAGACAGC TGGTAACAGT
23051 TCAACTAGTG CAGCTCATAG CCCAACACTG AGGGCTGCAA TTATTGTCA
23101 GGGAAAGTAAA AGTCATTTAC TGATGAACAT TTCAACCTCG CATGGAAAAT
23151 CCAAATCTCC CCTTAAAGAAT TCTTACCCCA TGTGAGAAAAT AAAGCACTGA
23201 TATAAACTTG ACCATCGGA ACAGCAATAG TGTGTAACAA TTAGATGCCA
23251 TTAGAAACAA AATTCGACAT AAGAACCGAGA GTTCAGAAAAA ATGACTAATC
23301 GCTGTCCTTC ATTATGTATC TCCACTAAC ATTACCATTT ATGAAACATT
23351 TTGACACATTA TCCCTGCTTC ACCCTTGCAA TGTGACATTT ATATAATCTG
23401 TGTAAAGTGT CCACCTGCCCC ACAGAGTCAT AAGTCCCTGG GACTTGGTGA
23451 TGTGCAAGT GACTGGCACA GAGGGTGAGC TCTGTGTCG TTGGGAAGAA
23501 AAATGGCTT CAAATGAATC TTGCGTTGTC TTGAAATGTA TAAACTGCT
23551 TTTCTAGCAA AAGCATAGAC ACTCTTTCOC TTGGTGACAT GTGCTACGAA
23601 TTCACTGCGG TTGAGGATCT GGGCTAAATG AACCAAACCT CCTATACAT
23651 GAAGGATACA CAGAGATGGT GACAGAGAT GGTCACTTCC GTGAGTGGAT
23701 CTCAAATCAAG TCCCTGAGA CTAATTCAA TTTTTTTCT TTACTAAAAT
23751 GATAAAAGTT GTTATTTGGG CTTTGGCTTG TTATTTTGT ATAACCTTGG
23801 GCTCAGATTT TCAATGTGTC AAATGTCAC TCAACAGCATG GTTCTCTG
23851 CAGTTTATTT CAITTAAGGA ACTCTTCACC AGTAAGTTA TTTACTTGCC
23901 TTGATATCTC CACACATTA TAATAAAACCT AACAAAACCT AATCTGAATT
23951 AAAATCTATC AGCTTCTAGG ATTATTTGT GTCTCTTC TTTCAACATG
24001 GTAACTGGGC TCTCTTCCTT AGGAGCTGTA GAAGATATGA CTGGGGTTG
24051 TTTTCTCTA CTTCATTTAT TATCTTCTT TTTCCAATC AGGTTAGTTT
24101 TTTCCTTTT AGTAAAGGT GCATAGTAAC TGCTTGTAGT ATTIGTTGAA
24151 CAAGTGAATA AATGAATGA ATTAAGGTAG TTGTTTCACT AGCAGCCAA
24201 CATTCTCTTC TCTCTTAGTA GTGGGGGGG TATCAGTTAT GGAATGGCAC
24251 CTCCCTTCAG AGGACTGATC ATGTCATTTT CAGCTTATGC TTCCCTTTAT
24301 GCAGTAAAGT TTCCATTTT CCATAAAGAA CAAGAAACCA AATAATCCTA
24351 ATGGATATAT AATGAACACA CAGATGAAA TTACACCTGC CATGCCCTTG
24401 AAAAAAGATC CCTAGCTACT TGTTATTCAT CTATAAATTA AAATCAGTCT
24451 TTTCACCTAT GTTTCCTCA GATCTCTGT TTGAAGTGT ATATAGATAT
24501 CAACATAGAA ATGCCCGTAA TATTGCTATC AACTCCAGTG GAGCAGTGAT
24551 TGTAGGGTT TTCAACATOC TTGCGTTAAG CAAACCTGCA AAATCAAAGT
24601 GTGAGCTACG TCTAAACAA GGGAGAGGT TTTTTTTTT TTTTAAGAGT
24651 TAGAACTAAG ACTCTCTACTT CCTCTCTGTC CTCCACATTT TTGACCTCA
24701 CATTGGGCC CTGGCATAGA ATACAGCACC CCTAACAGG CTCCCTGTC
24751 GGACTCTTTC TCTGAAATA ACAGATGTTG TCTCTAGAGC TGCAATGAAAC
24801 CTTAATGGAA TCAATGTGGG TCAGAGGGCC TGGATGGTGC TGGGGACCTC
24851 CCTGACCCAC AGCATCTGAC CCACATTTC AGGTTCTAG CGACTTGTG
24901 CAGTAAAGAA AAAGGCACAT AGCTAAGTGG AAGAGCAGAT GAGGCTTGGT
24951 GGGAAATCAGC CAGTGGCTCG CCTAGCAGAA GGTAAACAGA ACTGCTGGGG
25001 GCTTTGGTC CTAGGCTCAC TACTCAGGGA GGCACITTAACATGGAATGA
25051 CCAGCAAGTT TCTTCTCTGA TCTTTCCAC CACCACCA AGCCTAGTAC
25101 CTCCCTCCCT CTITGCTCTG TTGCTCTCTT CGGGAAATGCA CTGGAAACCA
25151 CCTTCAGITC TTGTTGGAAT TTTCCTTATTC CTTAACTCAGA AAGAGGAAGA

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FIGURE 3H

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Docket No.: CL001010

Serial No.: 09/776,705

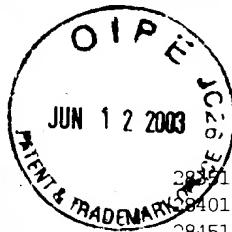
Inventor: Karl GUEGLER et al.

Title: ISOLATED HUMAN TRANSPORTER PROTEINS...

26701 TTCCCATCTC TGCACCTTAA GTGACTTCAG AACTAAAATT TTAAAGTGAA
26751 CATCAATCAC AGCATTCCA AAAATGTGAA CTCTTAGCTT AACCGAAGTA
26801 TTCACTTATT GGAAAGCTGA TAGAGTAATT CCACTAAGTC CAAAAAGTGT
26851 CCTCTAAAAG ATTCCAAAGA TAAGAGTGT TTCAACTTGT TCAAGCTGTA
26901 CAAACACAAA TGTCACTOCCT TCCCTCTGCC CACAGGGATC TTATCCAGT
26951 TACAGCAGCG TAACITGAGC AGCTGCTGCA AACTGAGGCT CTCTTGACCC
27001 TTGCGCTACT TATTTCAGCT GCTAAAATAG GGCTGAAATC TGTCAGGAT
27051 CCTGAAGGGA AGGATAAGAT TCTACTATT CAAITTAATT TAAGCTTTA
27101 TTACAGTGCT GCTGTGTCGA CAAACACTAAG CTAGAAGTC TGAGGAATGT
27151 TTACATTATT AGGTCCTGTT CCTGCCCTTT CATAGATTTA CAATCTATTG
27201 ATAGGGAGAG CTAAAAAGGA GAGAAAGAGG AAGGAGCAA CATAAAAACG
27251 TCAAAATTTC AAAATACCAT TTAAAATTTT TATTTAAAA TGTTAAATAC
27301 CATGCCAAT TAAGGAAAAC CTAGATTCTT AAAAATTCTT TTCAAACTT
27351 TGTCATAATC AATTCTAGTC TTGCCCTTAA TGCTCATCC AGTCTGATGA
27401 GACATGTTT GGTGACAAAGGTTTAC TATGTTCTT AATTATGTGT
27451 CTTGCCCTGTT ATCTCTTCT GACCGAGATT ATTTTAACA ATAAATCTG
27501 AAAACTAAGA AAGTGAAGC ATAAAATATT GTCITATAAA ATACGCCAAG
27551 GAAAAATGA CACTCCATT CAAATATCAA AAGITAGCAT CAAGACTGCA
27601 CAAGATGAAT GTACAGTCAT GTGTGCTTA CAAATGTGGA CATAATTCTGA
27651 GAAATGCACTT TTGAGCAAT TTGTCATTG TGCAAAACACC ATAGATTGTA
27701 CTTCAGCCT AATTTGGTGGG GCCTACTATA CACTAAGGCT ATATGGCATA
27751 GCCTAGTACT CCTAGGCTAC AAACCTGTAC AGCAATGTAC TGTAATGAAAT
27801 AGTGGGGTA CCTGTAACAT AATGGTAAGT ATTGTTGCTT CCAAACGTAG
27851 AAAAGCTACT GTAAAAATAC AGTATTACAA CCTTAGGGTA TCACTGCTT
27901 ATATGIGGTC TGTGTTGAC CGAAATGACT ATGCTTAATA CCACTGAAC
27951 GTACACTTAA AAAAGGTTAA GATGGTAAAT TCTATGTTAT GTATGTTTA
28001 TAATAATAAA AAAATGAAA AAAGCATCAA CATCTTTCT GGGAAAAAG
28051 AAAAGGAAAG AAAATGCATT AGAGGATGTA GAATATTGTA AGTAATAGAT
28101 AAAGTCAAA ACAAGAAAAT GATCTTGCTT TTGAACCTTC TTGTTAAAGA
28151 TTGTCACATC AGTGTACACA CTTGTTATTC CCAAACGCC CTTCACCTGG
28201 ATACGACATT CCTCAGATTG AGCCTGCTT ATTGCACTTA ATAAATGCT
28251 GGTGATCTT GTGCCACTA TAAAATACAT CTTCGGATTG ATAGGTGAGT
28301 TTCACTTAAAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAG
28351 TTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAG
28401 TTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAG
28451 TTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAG
28501 TTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAG
28551 TTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAG
28601 TTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAG
28651 TTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAG
28701 TTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAG
28751 TTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAG
28801 TTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAG
28851 TTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAG
28901 TTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAG
28951 TTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAG
29001 TTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAG
29051 TTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAG
29101 TTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAG
29151 TTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAG
29201 TTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAG
29251 TTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAG
29301 TTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAGGTTGAG

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FIGURE 3I



Docket No.: CL001010

Serial No.: 09/776,705

Inventor: Karl GUEGLER et al.

Title: ISOLATED HUMAN TRANSPORTER PROTEINS...

28371 TTTTCCAAAT AAGGAAATAT TATCTTTCAC TCCTTAAATAA AGTCATGTTA
28401 AGGCTTGAAA AGAATAATTTC TTACTGAATT ACTCTGAATT TTACCTTGA
28451 AGTCATTTAC CTTCTGGATG TTCTGGGAC TTCAGGATAA TTGGTATCA
28501 AAAGGICCAC CCAGCAGCTT GCTCCAAAT TTAACTCTA TGAGTCGGT
28551 CTTGCTTGGA TTTTACAGC AGTGTGACCT TGCAAATTAA CTGTCCTGT
28601 TTGTGACCTA TTTTCACTT GACCAATTGT GAAATGAGTA CAATTATCTC
28651 CTAGACCCAT TCTAGTGAAA AATGTTAGT TGCTGCTTTC TTATAATGAG
28701 GATTAGGAGG TTTAAGTATG TGATAAAATG TAAGGCTCT TCTGGTGTG
28751 AAATGTGAA GTATTTTATA TGAGGTATG TACATATATC TTATATATG
28801 TGIGTGTTATA TTATAATGTT GCACACACAC ACACACATAT ATACACTTTT
28851 TGTTGAAACA TCTTATAAGC TTTTGGTTT GTTGTGCTTAA TAAAATTAGA
28901 ATCATATCAT ATATGCTATT CTTTTTAAC CTGCTCTTTC TCACCTAAA
28951 GATTGTAAAGC ATTCTCTAGA TTATGAAATC TTTTCTGTC CCTIGATTTT
29001 TAATAATCAC AGGGTATTC AATCACTTGG TGACTAAAT CAATTAACTA
29051 TTACTCCATT GTTGAACCTG TAGGTGTAT CTCTCCACTG TATTCCTCTT
29101 CTTCTCTCAA CTAGGATTCT AAATGACTG ATAGGTAGG CCTGGGCATC
29151 TGAGATATTA AGAATAATAT GGCTAAATAT ATAGATCAGA TTGCCATATT
29201 ATGTTAACAA CTTAAAAACAA AATGTTACTA AGTATGTTT CTGTCCTCT
29251 AACAGAGTCT CTCTGAATTAA CAGGCTTAA TTTCCCTGTG GTTGGAAATA
29301 TTCTTATGA TTGGAAGCAT GGCACCTATT ATAATTGACT GGATTTATGA
29351 TCTCTCAAAT TCCAAGCATC ACTAACACAA GGAAAAATAC TTTCTTTTC
29401 TATTGAAAT GGTTACAAGT TATACCTCAA AGATAATTG AATTATCTG
29451 ATTGGAAATGT TATTCTAGG AAATAACAGG AAGATTCGAA AGACGTTAC
29501 CAGTAATATC ACCACCCACC TGCGAGAGAG GAAAATCACT GTTTTGTCA
29551 AGGATGGTGT TGATGTTGTT TAAAATAAA CCTGGTGGC ACATTTCTAC
29601 CCACGGTTTG CTAGACCTG GTGAGATGAT GAAGGGTAT TTTGCTGCT
29651 TTACGAGCAG AATAAGGTA ACTGCATGTA ACAATCATCA GATAGTACTC
29701 TTCCCCCTGC CGTCCTCTCA TCCCTGCACCC CCTAAAAAAAG TACCAACAT
29751 TTGCTTCTC AGAACATCAA ACAAAATGC CCTGGTGGCA AAGCTATCAC
29801 CATTAAATGT CTCTCTCAG TCTTGACCA AAGTCTCTGG TCTGTTTACT
29851 AACAGAGGCA AAAGGCATGT CTAGAACT GTTCTGTGTT CTGTAAGGTA
29901 CATGAATGGT CAAACACAG CTAGAGCAT CTATTTGCA ACAGAAAAT
29951 AATATTTTGC CCACCCGTT TGIGACATTG AGTTGIGACT TCTATATTC
30001 ATAGATTTTGT TAAATGTTA AAACATCTAT ATTTAAATGT TAAAACACTA
30051 AATATAGAGA GGGGCTTAT TTCAATCTATA GAGGAACAAAC AAAAATAATG
30101 CTTATAGCTA AACTGCTGT TCTAGAAAGC ATCTGCTTTT TCAIGTTATT
30151 CCTAAATCTC CTGTCATAC TTTGTCATT GACAAATGCT CTOCTCTCG
30201 TCTTCCATCC TCAITCAGAA TTTTTAGAAG ACCACAATG TGGAGATACA
30251 CTACCCAGTA TTGTTGATA CATTTTTATT TGATAAACAT TCAGTCAGG
30301 AAACIGTGAT TTGCTATATG TTIAITGTTA TATCTTATT CTGTTAGTCAT
30351 CAGAATGTTA ATGTAAGGTA CATTGATT TIAITTTTTA CATGIGTAGT
30401 TTCTTCTT CACAGTCAA GCATTATAT TATTGGGGT GGGGGCAGGG
30451 AATTAAGTTG GTGGCTCGA AAATCCATTIC ATATGTTACT GTCTACAAAT
30501 GTCTGGGGAT AATTTAAATT TGAAACCTAA GTTATATATA GTTGGCAAT
30551 GCTCTCTTC AATATTTACA ATAATAGGAT GATCTACAAG AAAATAAGTT
30601 TCTTTTGTCA AATTTTATC ATACTAAAGT TGTTCTTTA ATTTAGCTA
30651 TCTAAATAG GAATTAGTC AGTTAGCTC ACACAGGTTG TTGCTGACAT
30701 TCATTGGCCA TTTAATACAG TGTTGAGTGG TTCTCGTAA AAGTATAAGT
30751 GCTAACACTA CGAAGAAATG CACAGCATCA TTCTTGCTCA TTCTATAAC
30801 AAACTTACAT AAAATGGATT TAAAATTC TACTCACAGC CTAAAACCTC
30851 TGGAGTCAC TACCTTTT TCAAATCTATA GIAAGATCAC TIGTGTATT
30901 TATATTTTGT TAAAGCCAAT TATGAGTAC AAGTATCTATA CAGTACATT
30951 TGAGCTACTA TTATTTGAAA AAAATCTGCC AAATAGCATC TTAGGATAT
31001 ATTTACATT TCACTCATCT AAAAAGTATA CAAAATAAA AAGTGGAAAA
31051 AGGTATCTC TGAATGTCA AGGGCATCTT ATAGTGCCAA ATAATAAAGC
31101 ACCATTCTT TCTTCATAAC CAGGTTAAA ATTCTATAT ATGCCAGGGC
31151 AGACATACAT ATGATAGCTT GTGCTGATTA ATTAAACCC ATTTGTAAC
31201 AGATGAAAAT TTATTTCTC TATTCTATT ATAAGATGGC TCAATGTATT
31251 GGGAGGCTTC TTTTTTATTA CAGAAAGTGT ATATTGGTAT ATAATAAATG
31301 AACTTTCAA ATGACTATGA TGIGTTTTT GATCTATTGT TAAAGATGT
31351 TGIGTTATTG TGCTCATGAA CAAAATTAA AATCCAAATA CTGCTTTCT
31401 TATATGGT TATGTTCCAT TTCTATGTT ACCTTGTACA CATAACTAAC
31451 ATCTATAGCC ATCATCTGA AAATAATTGC CATCTTATTG TGGAAAATA

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FIGURE 3J



Docket No.: CL001010

Serial No.: 09/776,705

Inventor: Karl GUEGLER et al.

Title: ISOLATED HUMAN TRANSPORTER PROTEINS...

31501 GATAITTAAT CCTAAATTAT TATGATGATT ATAATTTGG CATCACATAT
31551 ATACACCTA GAATGAATGT GGAAGAAATG AGTCTTTAT CGTTAGTTG
31601 AAAGAATCCA TTGAAGATAG AAAATGAGAG AATAGAAGAA ACCTGAGAAAT
31651 AGTAAAATAA AGAGCAGAGA AAATATGGGG GCAGGGAAAA CATGTGAGTG
31701 CTAAGGATTG ATTATGAATG AACGATTAGG CGGATTGATG GATCACAGGG
31751 TAAGTATATG CTTAACITTA TAAGAAACTT CCACATAGTT TTCCACAGTG
31801 TTTCITACCAT TTTCATTTCC ACCCGTACTA CCTACAACCTT CCACTGACTC
31851 CACAGGCTG CCAACATTG GTGTGCTT TTGCAATTAA GCCTTTCTAG
31901 TGGGTCTGAA ATGGTAACTC ATTGTGATTT TCATTTCTGC TTCTGTGACA
31951 ACTAATGTTG AAAACTTTC AAGTGTAA TGTTCACTCA TATATCTCT
32001 TTGTGAAAGT GTGTATCAA ATCTTTGTC CATTTTAAA ATTTAGGTTA
32051 TGTGTTTTA TTGGGTTTT GTAGAAGCTC TTAAATATG GATCCATGTC
32101 CAGATGCCA ATATATTTTC CCAGCTATG GITATGGTTGC TTATTTCT
32151 AAAGGTGCT TAATTACATC TTCTGGGG CAGGTCAACCA TAGCTCAAG
32201 TTTGCAATT TATGCTTAA TGAGATAATA TTAATCAGAG TGGTATAGTC
32251 AAAATTAAT GTTTGTGATGT CCTG33CCCCA TATAGGTAGG ACTGGATCAT
32301 CTAACCAAGA TGCAAAAAAA AAAAACAAA AAAACAAAAA TAGTACTTGG
32351 AAAACTTAT TTAAATTAA ACA (SEQ ID NO:3)

FEATURES:

Start: 3000
Exon: 3000-3118
Intron: 3119-7452
Exon: 7453-7543
Intron: 7544-8039
Exon: 8040-8155
Intron: 8156-10894
Exon: 10895-10968
Intron: 10969-11437
Exon: 11438-11530
Intron: 11531-16047
Exon: 16048-16129
Intron: 16130-16215
Exon: 16216-16298
Intron: 16299-16408
Exon: 16409-16467
Intron: 16468-17301
Exon: 17302-17577
Intron: 17578-17709
Exon: 17710-17789
Intron: 17790-19073
Exon: 19074-19174
Intron: 19175-20904
Exon: 20905-21029
Intron: 21030-26649
Exon: 26650-26794
Intron: 26795-27670
Exon: 27671-27768
Intron: 27769-29273
Exon: 29274-29372
Stop: 29373

CHROMOSOME MAP POSITION:

Chromosome 12

ALLELIC VARIANTS (SNPs):

DNA Position	DNA			Domain	Protein		
	Major	Minor	Position		Major	Minor	
1386	T	C		Beyond ORF(5')			
2594	T	C		Beyond ORF(5')			
2757	G	T		Beyond ORF(5')			
6107	C	T		Intron			
6392	T	C		Intron			

FIGURE 3K

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9484	C	G	Intron			
10280	A	G	Intron			
10297	G	A	Intron			
10331	G	A	Intron			
10536	T	C	Intron			
11548	T	C	Intron			
11917	G	T	Intron			
12840	T	-	Intron			
12844	A	-	Intron			
12847	T	-	Intron			
13019	C	-	Intron			
13022	A	G	Intron			
13285	G	A	Intron			
14461	G	C	Intron			
15464	-	G	Intron			
15469	-	A	Intron			
15545	T	C	Intron			
16199	T	C	Intron			
16798	T	C	Intron			
18103	C	T	Intron			
18421	A	G	Intron			
18528	G	A	Intron			
18722	T	C	Intron			
18775	C	G	Intron			
18951	T	C	Intron			
18974	T	G	Intron			
19540	A	C	Intron			
19841	G	A	Intron			
20170	A	C	Intron			
20343	T	C	Intron			
20519	G	A	Intron			
20963	T	C	Exon	411	P	P
21840	G	T	Intron			
22783	C	T	Intron			
22787	G	A	Intron			
22825	T	C	Intron			
22967	A	T	Intron			
23248	A	G	Intron			
23764	G	T	Intron			
23765	C	T	Intron			
24432	A	G	Intron			
24538	C	G	Intron			
24693	T	C	Intron			
24819	C	T	Intron			
25743	C	T	Intron			
26044	G	C	Intron			
26555	G	A	Intron			
27886	A	C	Intron			
31884	T	C	Beyond ORF(3')			
32229	T	A	Beyond ORF(3')			

Context:

DNA
Position
1386

ACCCATATGCAATGCTTACCTCTATTCTCTCTTACCTTAAACCTCTTCTTCACTCTT
TTATGTATATACATTAGGCTGCCTTATATTAAATAATAGTTCAATTTCATTGTCCTCCCTGC
TTAAACACTGIGCTATTTTTAAATTCTGAGAACTGCCTTCCTTAAATTCTAGACAA
TTCTCTGCCATTATCTCTTCTGTTGCTCACCCTAGTCACAATTCTCTATATIGG
AAAGACTATCAGTGTATATTGAACTTGTAAATTCTTATTTCCTCCATTCTCTTAACCT
[T,C]
CTTATTGTTGTTCTTCTTAAATCTCTCATGCTATAATTGAGTGTTCACAGA
TCIGTCCTTCATTATAAGTCCTCCAGCTGAGTTTTAAATTCAATGATTCT

FIGURE 3L



Docket No.: CL001010

Serial No.: 09/776,705

Inventor: Karl GUEGLER et al.

Title: ISOLATED HUMAN TRANSPORTER PROTEINS...

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ATTTTTTCTCTTTTTAAGAATTCTTTTTTGACCTTTTGCAACAGCTGTTCTCC
TTTATATTCCTTATAATGTTTATTCCTGAAAGTTATCTCTTATTTGAATGTT
TCTTCTAAAATGCTTTCTTTTATTAATTAATTAATGAAAAGTCCTTTAAATGCTTIG
(SEQ ID NO: 24)

2594 CTGAACCTTCCTTGTACTATTCTAACCTTGCTTCAGGATCAAGTGCTAGAAAGT
TACTCTCAAACCTGATCCTCACCTATGTCATATTATCAAGCATTGGGGTTAAT
TCTTCTATGTCCTAAATTAATTAAGCAGTAACTTCTCTAGTTATGCTAGTAGAGAC
ACTGGTAGATTCTGCTTGGTAGACCTTCCTCTGCAACAAATTACTTTGCTCTTCC
CTTCTAAAACATGATCCCACCTACAAATACCTAAATTCCTTGAGACTGCTGCCATGT
[T, C]
TTAAGATTCTTTTTTCTCATAGTGTACTGTTAAACCTGCCATTCTTCTTATACATAG
GCACTCTATAAAATATCTGCTAATTAGCAATTATTAGTAATTCTCTCTCTCTTCCAT
TCTCTCTCTCTGTTGGTAGAGAACATTCTAGGATTGCTATGTAAGTTCTCA
GGAGTTCTTCTTCTCTCCCTTCTACAGAGGACATACAAATGAGATGATTCTATTC
ACTTATTCATTTAAATAAAATTATAATGATGTTGTTGCTGAGAACAGAG
(SEQ ID NO: 25)

2757 TTAATTGCTAGTAGAGACACTGGTAGATTCTGCCCTGGTAGACCTTCCTCTGCAACAAATT
TACTTTGCTCTCTTCTTCTTAAACATGATCCCACCTACAAATACCTAAATTCCTT
GAAGACTGCTGCTGCTGATGTTTAAGATTCTCTTCTTCTGCTAGTTGACTGTTAAACCTG
CAATTCTTAAATACATAGGACTCTATAAAATCTGCTAATTAGCAATTAGTAAATT
TCTCTCTCTCTCTCCATTCTCTCTCTGTTGGTAGAGAACATTCTAGGATT
[G, T]
CTTAATGTAAGTTCTCAGGAGTTCTCTCCCTTCTACAGAGGACATACAAAT
GTAAGATGATTCTATTCCTACTTCTTAAATAAAATTATAATGATGTTGTTGTTGTT
CTGTTTGAGAACAGAGTGTCTGAACTCAACAAAGTGGAGAACCTTAAGCTGAAG
GTACAGTATAATTATTCACCTGAGGGGCTTGTGTGTTGACAGAACGGCTGACAGCTC
AAATGGATCCCTGGAACATGAGAAATGTCACATGAAACCATGATGAGAGCAGCTG
(SEQ ID NO: 26)

6107 GTTTCTGCTGCTGTTCTATCTACATCTCATACCTGTTCTTCTTCTAAAGTAACCC
GTCTACCTCTTCTCTCCAGATTATTTCTAGGATTAGCTCTGTTATAAAAATAGCTT
GTACAGATCTCTACAATAATTATTTCTTCTTCTAAGGTTTATTATTTATTTA
TTGAGACAGACAGAGTTCTCTCTGCTGGCCATGCTGGAGTGCATGGTCAATCTGG
CTCACTGCAACCTCTGCCCTCCAGGTCAAGGATTCTCTGCTCAGCTCTGAGTAG
[C, T]
TGGGATTACAGGGGCTGCCACCACACTGGCTAATTCTGTTCTAGTAGAGAGGA
AGTTTACCATGTTGGCAGGCTGCTCTGACTCTGACCTCAAGTTATCTACCCCACT
CAGGCTCCAAAGTGTGGATTACAGGCTGAGGACTGTGCTGGCTCTAGGATTAT
ATTAAATGAAACATCTCAATTATTTATCTCTCTTCTTCTATGTTCTGAGGAAT
GTCCTAAAAATTCTCAAACCTCAATTGAAAGACTTTAAATCATACATAGTCGAGCA
(SEQ ID NO: 27)

6392 CAGGCTCTGAGTAGCTGGGATTACAGGGCCCTGCCACCACACTGGCTAACCTTCTG
TTTCTAGTAGAGACGAGTTCTACCATGTTGCCAGGCTGGCTCTGAAACTCTGACCTCA
AGTTATCCACCCACCTCAGCTCCAAAGTGTGGATTACAGGCTGAGGACTGTG
TGGCTCTAGGATTATAATAGAACATCTCAATTATTTATCTCTCTTATCTTCT
TTTCTATGTTAGGAATGTCCTAAATTCACCTCAATTGAAAGACTTTAAAT
[T, C]
ATACATAGTGTGAGCAATTATATAAAACACTAAAAGTGTGACATTGAGTATA
AAAATGCAATGCCACAGCAGGCTTATTAATGAGGCTCTTGGAAATGTTGCTGGCT
AGGTCGGTAGCCCTCAAAGGCCCTGGCTTGTAACTGCTGGAGGCTGACAGCTCTAT
ACCAAGTTGTCACATCTCTAGGCTGTTGCTCAAGAAAACCGAAATCACACGCTCTG
ATAGTGACATCTAAAGTTCTTCTCCCTCAACTCTTGTGAGTCAATTGAAATTGCT
(SEQ ID NO: 28)

9484 GCAACATTATATCACAATATGTCGTGTTATGTTCTGAAATATCACATATGATTGAA
TCACACAGCTATTGAGGGCTAAGCATCAGGACTATAAAATTGTTATGTTGTTGCT
TTGTTGAACTTTTATGTTATGTTATCTCTAGCTGAAATGGTTTATATCAACCTTA
CTTCTATATAAGCAATGTTGAAATAAACTGGATTTTAAATATGAAATTGAAATTAGC
TAGTGATGAGTCATATATTGTTGTTGAAATGTCCTTACCTCTAAGACAAAAAA
[C, G]

FIGURE 3M



Docket No.: CL001010

Serial No.: 09/776,705

Inventor: Karl GUEGLER et al.

Title: ISOLATED HUMAN TRANSPORTER PROTEINS...

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CTGGCTTTCTTATTAAATIATACATACCATIAAAATGAATTAGGAATTACAGATCAGTG
ATGAATAGAAATAGGAAAAACTTCCCAATCCCACAGTCATAGATCATCTCATGAGAG
AAGAATGTTCCACITTTAAATGAGGCTCAITTTAGGCCTATAAACACTTACAGAT
GAATTGGTCAAGAACAAATTAACTAAACATCATGGGGTGTGTTTGCTGCTAAGT
AGCCAGACTGGATTAGCTTCTCTTAATTTATAGCAAGTGACACAGTATTAAAG
(SEQ ID NO: 29)

10280 ATAAGAGTGCAACATAGCTACAGGGTTATAAAATTATAATTCAATGGTCAAATGTACA
TTTGTAGTATTGATTTCATTGGAAATTACCAAGGGATTAGATCAATTGTGGGAAAGTGT
ATTTTTAAAAATAACAAAGATAAAGATTTTCTGAAATTCCAGGTAACAGCA
TTGCTCTCCATTATTACGTAGATGCTCTATCAACATTCTTATTGTGCTCCAAAT
CTTGGATTGGAAAATACCAATCCGATAAACACATAAGAACCATACATGTGGGG
[A, G]
TCTTAACACCAAAATGACTCTGAATGCAAAAAAAAAAAAAAAAGGAATTTC
GTGCCCCCATCTTAGCTTCTGCTTCTATTATATATGCAACTGCTGCCCCCTCTA
TCTTACAAAGTACTGTAATTCAATGCAACAGGATCAGCAGTAATGCAAGCTCAGACTGCA
TGCTTGCCTTGGATTGAGATTAGGTTAGTCAGGCTATGTGAATAGCC
CTCAATTCTAAGTGCTATGTAATATGCAAAATATGATGTACATATTCCATGTGC
(SEQ ID NO: 30)

10297 CTACAGGGTTATAAAATTATAATTCAATGGTCAAATGTACATTGTAGTATTGATTTC
ATTGGAAATTACCAAGGGATTAGATCAATTGTGGGAAAGTGTATTTTAAAAATAAAC
AAAGATAAAGATTTTTCTGAAATTCCAGGTAACAGGACATTGCTCTCCATTATT
ACGTAGATGCTCTATCAACATTCTTATTGTGCTCCAAATCTGGATTGGAAAAT
ACCAATCGTATAAACATAAAGAACCATACATGCAATGTGGGATCTAACACCAGAAAT
[G, A]
ACTCTGAATGCAAAAAAAAAAAAAAAAGGAATTTCGTGCCCCATCTTAGCT
TTCTCTGCTTCTCTATTATATGCAACTGCTGCCCCCTCTATCTTACAAAGTACTTGT
TAATCTAATGCAACGGATCAGCAGTAATGCAAGCTCAGACTGCAATGCTTCTGCTTGT
TCTTAGATTCTAGATTAGGTTAGTCAGGCTATTGAAATAGCCCTCAATTCTAAGTGCT
GATGTAATATGCAAAATATGATGTACATATTCCATGTGCTGAGTAAGTAGATGTAG
(SEQ ID NO: 31)

10331 AAATGTACATTGTAGTATTGATTTCATTGGAAATTACCAAGGGATTAGATCAATTGTGG
GAAAGTGTATTTTAAAAATAACAAAGATAAACATTCTGAAATTCCAGGTA
AAGCAGCATTGCTCTCCATTATTACGTAGATGCTCTATCAACATTCTTATTGT
GCTCAAATCTGGATTGGAAAATACCAATCGTATAAACATAAAGAACCATACATG
CAATGGGGATCTAACACCAAAATGACTCTGAATGCAAAAAAAAAAAAAAA
[G, A]
GAAATTCTGTGCCCCATCTTAGCTTCTGCTTCTCTATTATATGCAACTGCT
GCCCCCTCTATCTACAAAGTACTCTGTAATCTAATGCAACAGGATCAGCAGTAATGCA
CAGACTGCAATGCTTCTGCTTGGATTCCTAGATTTCAGATTAGGTTAGTCAGGCTAT
TGAATAGCCCTCAATTCTAAGTGCTGATGTGAATATGCAAAATATGATGTACATATT
CCCATGTGCTGAGTAAGTAGATGTGCAATTGCTAATGTTGCTATACATTAGCATCTAA
(SEQ ID NO: 32)

10536 TACCAATCCGTATAAACATAAAGAACCATACATGCAATGTGGGATCTAACACCAAGAAA
TGACTCTGAATGCAAAAAAAAAAAAAAGGAATTTCGTGCCCCATCTTAG
CTTCTCTGCTTCTCTATTATATGCAACTGCTGCCCCCTCTATCTTACAAAGTACTT
CGTAATCTAATGCAACAGGATCAGCAGTAATGCAAGCTCAGACTGCAATGCTTCTG
ATTGATGAGATTAGGTTAGTCAGGCTATTGAAATAGCCCTCAATTCTAAGTG
[T, C]
TGATGGAATATGCAAAATATGATGTACATATTCCATGTGCTGAGTAAGTAGATGT
GCAATTGCTAATGTTGCTATACATTAGCACTAAGTTATGAAACCAAGATTCTACACTGG
GTAACATTAAAAAAAGTTAGGGACTTCAGGTATGTAAGGAAATATGCAAAATTCTTCTA
CGACTTTAAAGGTATGTTAGGTTCTGAAAGGATTCTCAGGCTCCCCAAATCCAC
ATACTTTGGAAAGCTGATGATTGAAAAGATAATGATGCTTATTGTAACATCTAAC
(SEQ ID NO: 33)

11548 ACCATTGATTCTGTGTTGGAGAACATTGTATAATTGCTATTGGTTTGAGGTGCA
TCCTTGGCTTATAATTCTATATGATGTTTACATGTTGAGACTCCAGCATGGA
ATTATAATGACAAAAATATTGATGCTTAAACAAATCTCTTAAACAGGCTATTCTATCT
TTGATGTAGGGCTTGTGATTGAAAAGGATTTGGAGAAAAGGCTTGGATGGGGGA

FIGURE 3N



Docket No.: CL001010

Serial No.: 09/776,705

Inventor: Karl GUEGLER et al.

Title: ISOLATED HUMAN TRANSPORTER PROTEINS...

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AAAAATTGGAGCTTTGTTTCAATTACAATGAGAACATTGGAGGTAGGGATAACTTT
[T, C]
CAATGGATCCATAAAACTTCTATAGCGTGTCAATAAATAAGAAAACCTATGGCAATAA
ACAGGCACTTATGAGATACAGAAAAATGCTACTTATAGTTCTTAAATTAAATGATAGT
TCTTAAATAGGTTGTCCTGCTTAAATAAAACAGCAATATCTAAGAATGAAATAA
CATATAAAACCCGCCAATTGAAATTCTAGAAATTAAAATAAAATAAGCTTCTTGTAT
TTTAATGTTATTATAGCATGAAATTACTCTTAAATTGAAGAATTGTCCTTATAT
(SEQ ID NO: 34)

11917 TTAGATAACAGAAAATGCTACTTATAGTTCTTAAATTAAATGATAGTTCTTAAA
TAGGTTGTCCTGCTTAAATTAAAACAGCAATATCTAAGAATGAAATAACATATAA
ACCCIGCCAATTGAAATTCTAGAAATTAAAATAAAATAAAAGCTTCTTGTATTTTAATG
TTATTATAGCATGAAATTACTCTTAAATTGAAATTGTCCTTATATCTGTCATT
GACAAACAGTTGACGTTCTATGTTGACTGAGTTGATTACTAAACTGAAAAGTGG
[G, T]
TGCTGGGGACATAGCCAAATGCTGTCCTGAAACCCAGCTGCACTGAGCCAGC
CCACTAGACAGTGTCTGGAAGTTACTAAGGAAAAGCTGGCTAGGCATCAAATGCA
CTATAACCCCCGTTGTTGATCTATGAACTCTTAAATCCACTGAAATTATCATTC
CAGTGTAGGACCTAGAAATATATATATATTAAACAATGTTCTCGTGGTGTGTT
TGCCACCAGCTCATACTGTTCTGTTGCTTGGCCCTCAGAAGGCATCCAAACCC
(SEQ ID NO: 35)

12840 GACTATTGCACTAGTCCTCTAACGGCTTCTGGTTGAGTTCCCTGCTCTCAGATA
AACTCTAATTGTTCTCCAGATAAACTTCTCAAATTGAGCTGTTCTACTTTGTCG
TGCAATAAAATTCTTCAGCATGCCCTTATTATTTCAGGAAAAACTAAACTCATGGAC
TGACACAAGATCTCGTCTAGTCTCTGCTCAATCTTCTAAACTTCTTAGCAATGCC
CATATCTATCTATCTTATCTATCTATCTATCTATCTATCTATCTATCTATCTATC
[T, -]
ATCATCTATCAATTATCCATCATCTATACCCCTACATGTCCTGTCAAACCCATAACAA
TTATATTATTCCCTAACAGTACTATTAAATTAAATTAAATCAGCTGCTTC
TTCAAGGCTACTTCTCCCTGACTGTCCTCAAAGCTCCAAACCTAACACACAG
CAC
CTGGTCTATTGCTCTCTAGACTGGTAAATACTAGTTCTCTGGCTCTCATGGCTCTGT
(SEQ ID NO: 36)

12844 ATGGCAGTAGCTCTAACCTGGCTTCTGGCTTGAGTTCCCTGCTCTCAGATAAACT
CTAAATTGTTCTCCAGATAAACTTCTCAAATTGAGCTGTTCTACTTTGTCGTC
TAAATTCTTCAGCATGCCCTTATTATTTCAGGAAAAACTAAACTCATGGACTGAC
AAAGATCTTGCCTAGTTCTCTGCTCAAATCTTCTAAACTTCTTAGCAATGCCATA
TCTATCTATCTTATCTATCTATCTATCTATCTATCTATCTATCTATCTATC
[A, -]
TCTATCAATTATCCATCATCTATACCCCTACATGTCCTGTCAAACCCATAACAAATTAT
ATTATATTCCCTAACAGTACTATTAAATTAAATTAAATCATCCATGCCCTTCTTCA
CAGGCTACTTCTCCCTGACTGTCCTCAAAGCTCCAAACCTAACACACAGCACA
CAC
TCTATGCTCTCTAGACTGGTAAATACTAGTTCTCTGGCTCTCATGGCTCTGT
(SEQ ID NO: 37)

12847 GCAGTAGTCTCTAACCTGGCTTCTGGCTTGAGTTCCCTGCTCTCAGATAAACTCTA
ATTGTTCTCCAGATAAACTTCTCAAATTGAGCTGTTCTACTTTGTCGTCATAA
AAATTCTTCAGCATGCCCTTATTATTTCAGGAAAAACTAAACTCATGGACTGACACA
AGATCTTGCCTAGTTCTCTGCTCAAATCTTCTAAACTTCTTAGCAATGCCATACT
ATCTATCTTATCTATCTATCTATCTATCTATCTATCTATCTATCTATC
[T, -]
ATCAATTATCCATCATCTATACCCCTACATGTCCTGTCAAACCCATAACAAATTATATT
TATTCCCTAACAGTACTATTAAATTAAATTAAATTAAATCATCCATGCCCTTCTTCA
GCTACTTCTCCCTGACTGTCCTCAAAGCTCCAAACCTAACACACAGCACA
AC
ATGCTCTCTAGACTGGTAAATACTAGTTCTCTGGCTCTCATGGCTCTGT
(SEQ ID NO: 38)

13019 CTGACACAAGATCTTGCCTAGTTCTCTGCTCAAATCTTCTAAACTTCTTAGCAATGC
CCATATCTATCTATCTTATCTATCTATCTATCTATCTATCTATCTATCTATCTAT



Docket No.: CL001010

Serial No.: 09/776,705

Inventor: Karl GUEGLER et al.

Title: ISOLATED HUMAN TRANSPORTER PROTEINS...

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CTATCACTATCAATTATOCATCACTATACCCATACATGTOCTGTGTCAAACCTAACAA
AATTATAATTATTCCTAACAGTACTATTAAATATTAAATTCATCCATGCCCTC
TTTACAGGCTACTTCTCCCCCTGACTGTCCTCAAAGTCTCCAACCCAAACACACA
[C, -]
GCAC
CTCTGCTATGCTCTCTAGACTGGIAAATACTAGTCTCTGGCTCTCATGGCTCG
TTGTATCTAGTATGTTACTGTTCTAAAGGATATTAAACACTTGAGTAGAGAATA
AGCTTTGGAGCTGATGGACCTGAATTGAGCTGTTCTGACTATCTGTAACCTG
GGAAGATCACTGACTCTTGTGATTTCATGTATAAAAATTACCTAACAAAGGC
(SEQ ID NO: 39)

13022 ACACAAAGATCTGGCTAGTTCTGCTCATCTTCTAAACTTCTAGCAATGCCA
TATCTATCTATCTTATCTATCTATCTATCTATCTATCTATCTATCTATCTATCTA
TCATCTATCAATTATCCATCATCTATACCCATAGTCTCTGGCTCTCATGGCTCG
TATATTATTCCTAACAGTACTATTAAATATTAAATTCATCCATGCCCTCTT
TCACAGGCTACTTCTCCCCCTGACTGTCCTCAAAGTCTCCAACCCAAACACACGC
[A, G]
CAC
GGCTATTGCTCTCTAGACTGGIAAATACTAGTCTCTGGCTCTCATGGCTCTGTT
GTATCTAGTATGTTACTGTTCTAAAGGATATTAAACACTTGAGTAGAGAATAAGC
TTTGGAGCTGATGGACCTGAATTGAGCTGTTCTGACTATCTGTAACCTGGGA
AGATCACTGACTCTTGTGATTTCTGATGTATAAAAATTACCTAACAGGCTAT
(SEQ ID NO: 40)

13285 ACTGTCCTCAAAGTCTCCAACCTAACACACACGGCACACACACACACACAC
CACACACACACACACATTTCTCTCACTCTGCTACCTGGCTATTGCTCTCTAGACTG
GTAATACTAGTCTCTGGGCTCATGGCTCTGGTCTTGTATCTAGTATGTTACTGTTT
CTAAAGGATATTAAACACTTGAGTAGAGAATAAGCTTTGGAGCTGATGGACCTGA
ATTGAGCTGTTCTGACTATCTGTAACCTGGAGACTCTGACTCTCTGCT
[G, A]
ATTTTCTATGATAAAAATACCTAACAGGCTATTGAGGATGAAATAAGGTAA
TATGGCATAATAAGTGTCTGATATGCTCTCTCTCTGGTCTCTGCTCCATA
TCCATGTCCTGGAGTCTGCTGATTATTAAATAGGCATTAAAAAATTATAAAAC
AAATAATGATGATTGTAAGAAAACCTAACCTGCTAAATATATAAAATTACCAAGAAA
GTTATGTCAGTCTGAGAACATAACTACTCATAGGTTCTCCCTATGCTAACTCAA
(SEQ ID NO: 41)

14461 TATCGGAGATTTCATAGGATTGCCATTAGTTGGCTAATTAAACACTGAAATAACAG
GCTAAACCTATAAACCTCTGACTCAAGAAGTGTGACTGCCACCTCAGCTGGTTC
AAAGCATAGCCTACTACTGCTCTAAACATGGAATAAAGTATAAGCGGCTCTCAGT
CAAGCCTCACACAGTAAGAGCGTGACTTTAAGGGAGTAAGTGAATACTGTAACATC
ACCCAGAAATAATGCTCTCACCTGGTACTTTATGTTAGTGTATTTGGCATAAA
[G, C]
AGAAATCACTGTTCTCTATTTAACACTCTACATTAAAGAACCTTAACTTCTCAA
TCCCTAAAAAATTAACATTACTGCAAGATGTTTACATTAACAGATTAATGCTGGAT
CATTCGAAATTGAGACCAACATGTTAACATCACTGACATCACTGAAACAGCAA
TTAATAGCTGTAACATTGATGGTACCTCACCAAGGAGCTAATGAAATACTCTGT
GTCACACTGTAAGATTAGCTTACGCCAGGCTTGGCAAAGATAACCAATAATG
(SEQ ID NO: 42)

15464 TGAGITCTATTAACTGAATCTTGGCATGTCACAAATTACGTTATCTTCA
CCAAATGGGGCTTGAAGAAGGGTGAATGCTAAATAATTACAGTTGAGGAAATT
GTATGTTATGTTATGAAATACATATTCAATTCTCAGGGAGAGGCTTGTAGATTCTCAT
CAAGAAATCTTCAACAGAGTGAATAATCATCACTGTTACCTAGATGCTCATGA
ATTTCGCACTTATATAATTCCATTAGTTAGCCAAAGGAGAGTAAGTGAAGAGGGGG
[-, G]
AAAAAAAATCTTGTGACAAAGATGGAGAGAAGCTGTCATCTCTGTTATCTTCTATC
ATCCAGGAAGCTTGGTTGACAATAAGTGGCTGAGACTTGTGTTACTCTCAGAT
AGGTCCCCGAGGACTAGATTGGTGGCCATCTGCAAGAAAACAGAGGGATATTGACTC
TCCAGATCTGCCCTTGTGTCCTCACCTGAGCTGGCCATGCTTTGTTGCGAGAC
TACTGCCAAGTTAGACACTAACACAGGACACTGAGTATGGCTATGTTGATTATA
(SEQ ID NO: 43)

FIGURE 3P



Docket No.: CL001010

Serial No.: 09/776,705

Inventor: Karl GUEGLER et al.

Title: ISOLATED HUMAN TRANSPORTER PROTEINS...

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TCIATTTTAACTGAACTTITGGCCATGIGTCACAAATTAAACGTTATCCTTCACCAA
TGGGTGGGCTTGAAGGAGCGTGTGATGCATAAAATATTACAGTTGACCAAATTTGTAAT
GTTATGTTATGAAATACATATTCACTTTTCAAGGGAGAGCTTGATTTCATCAAGA
AATCTTTCACAAGAGTAGATAATCATTCAATGTTACCTACTAGATCTCATGAAATT
TGCCACTTATATAATTCCCTAGTTAGCCAAAGAGGAGAGTAAGTAAAGAAGGGGGAAA
[-, A]

AAAACCTCTTGTACAAAGATGGAGAGAACGCTGTCATCTCTGTTATCTTATCAATCC
AGGAAGCCTTGGTTTGTACAAATAAGTGGCTGAGACTTTGTTGACTCTCAGATAGGTC
CCGGAGGACTAGATTGGTGGCCATCTGCAAGAAAACCAGAGGGATATTGACTCTGAG
ATCTGCCCCTTGTGATCTGCATCTCAGCTGGCCATGCCCTTGTGTCAGACTACTG
CCAAGTTATAGACACTAACACAGGCACACTGAGTATGGCTATGTTGATTTATAACTAA
(SEQ ID NO: 44)

15545

AGGGCTGATGCATAAAATTTACAGTTGAGCCAAATTTGTTATGTTATGTTATGAAATA
CATATTCTTTCAGGGAGAACGGCTGAGATTTCATCAAGAAATCTTCACAAGAGT
AGATAATCTTCACTGTTATCTACTTACCTAGATGCTCATGAAATTTCGACTTTATATAAT
TCTCTAGTTAGCCAAAGAGGAGTAAGATGAAGAGGGGGAAAAAAACTCTTGTGAC
AAAGATGGAGAGAAGCTGTCATCTCTGTTATCTTATCAATCCAGAAAGCTTGGTT
[T, C]

TGACAATAAGTGGCTGAGACTTTGTTGACTCTCAGATAGGTCCCCGAGGACTAGATTG
GTGCCCCATCTGAGAAAACAGAGGGATAATTGACTCTGAGATCTGCCCCTTGATTC
TGCATCTCTCACTGAGGCTATGCCCTTGTGTCAGACTACTGCCAAGTTATAGACAC
TAACACAGGCACACTGAGTATGGCTATGTTGATTTATAACTAAATGAGGGAGAACCTTA
GAAC TGAGCTTCACTGAAACTTGGAGCAGGTTAACACAGAAATCAGCCCTGATACT
(SEQ ID NO: 45)

16199

AGAAACTGGAAGCAGTGCCAAATACACAATGACTTTTCCATTGGGGATTAGATG
TTCTATCTACATATCCAAATGTCATAACTTGTGTCATGTCATCTCAGTACTGTCACAA
CCATTAAAGCTGTCACATTTCOATTTAGCAATGTCAGCTACCTCTTATCAATTAAATA
TGAACACTGAGTAATCAGAGCATTCATGGACTTGAAAGAAAATCTGGTATGTCCTT
ATGCTCCCTCTGAGACATCAAGTGACTCATCTACTTGTGCTTTCGATTTCTAATATCC
[T, C]
TGCTCTCACTCTAGAGAAATGGTACCTCAATGGCAACTACCTCATCATATTGIGCTG
TTGGAAATTATTCTCCACTTTGCTCTTAAAGGAAAGGATTTCTAAACTGG
AAATATTATTTATTTTACATTAAATAGGTTAGCTAATTGAGATGCCATATTCA
CCCTCCAAAATGCTCTCTAACTCTAGGTATCTGGCTATACCAGTGGATTCTCT
TACCTGCAATGGTGTGTTGTTGAGTGTGAGTGTGATGACATGATCTGCAAGGTT
(SEQ ID NO: 46)

16798

GTGGTTAGCATGAGTTTTTGTGCTAAATTAGTGTCTCATTTGTCAGCACTTC
ACTAATAATGAAATGTTCTTGTATCACAAAGTAAATTCTTGTAGACTAATTAGAGAAA
AAAAGAGCAGCTAGATTAAAGATAGTTGAGGTTAGAATATCAAAGCTACTACTAAATGGT
TTGGTCTAGGCACACTGGTTATATATGGGGAAAAAGGAAACTTCAAGCAGGAACATGA
CAATAATCTGGCATTAGAACAGCAGAGGAGTOCCAGATGAGAAACAAGAAGGCTATA
[T, C]
CCATATTCCACATGAATCAGCCATTCTCTTACACATTCCACCCATTAAAGAGGGACAAG
AACAGTGGATTAAAGAAGAAATCTCTCTCTAGGCCCCCTGACAAAAGAGGAATTCT
TGCACATCATGAATGCCAAATTATAAGGATTCTCCCTAAGGAGGAAAGGAGAAGGA
AAAAAGTTGAGAGCCATGTCACCTTAGTTGAGAAATAAGGAATGATCATCTT
CTCATGGAAGGGCATGAAAGAGGGTGGAAAGGATTCTGCAAAATATTGCTCTGTTAACT
(SEQ ID NO: 47)

18103

CATTTTACGATCTAAATTGCTTGAAGAATTCTGCTCATATGTCACAAAGATTCTTAAACAG
GAAACACAGTTATAGCTCCCTCTCAGAGAAAATATGTTACTCCATCCACTCTCAGTAA
CATGCTTAAATCAGAAAGGTGGAAATCAGCCACACAGCCTACCTTATCTCTTCTC
TCTCTCTCCACCATATGGTTCAAGGGAGGGTTCATGCCAGTGACAGGACTGG
ATGGTTGAAATAATTGCAAGGTTGGATTAAATTGAAATTGTTGTCAGGAAAGAAA
[C, T]
GATGTCAGCTGAGCTAGAAATGAAACACCCATGACGAGCAAAACTATGGTTAGGGCA
GCGTCAAGGAGCTGAGTGTCAATTATAGTCAGCACTAACCTTGTCTAGAACACATT
CAATTAAAGAGAATGTCATATCTGCTCTTGTCTATTTGTCACAAATAGAGTCAC
GGCTAGAAAATCTGTTCTCCAGCTGATGGTCTATGGTCTATTGTTATCTTCT
TTGAAGTTGATATTGCTGGAAACAAGGATATGAACTCATTATAGCTGTTCT

FIGURE 3Q



Docket No.: CL001010

Serial No.: 09/776,705

Inventor: Karl GUEGLER et al.

Title: ISOLATED HUMAN TRANSPORTER PROTEINS...

(SEQ ID NO: 48)

AAATGAAAACACCCATGACGCCAAAACCTATGGTTAGGGCAGCCTCGATAAGCCAGTG
ATGTCATTATAGTCAGCACCTAACCCCTTGCTAGAACACATTACAAAGAGATGTGT
CAATATCTGCTCTTGTGCTTGTATTTGACAAATAGAGTCAGCTAGAAAATCTGTGT
TCTTCAGCTGATGGCTATGGCTATTGTATTCTTCCCTTGAAGTTGGTGTGATT
TGCTGGAAACAAGGATATGAACTCATTATAGCTGTTCTCTTCTTAAAGGGAGG
[A, G]
TATTATATAATAATTCTCAACTTCTTAACTAGACATCAGTAACCTCAGTCATTCT
CACTAAATAGCAAACCTTCCCATAAATTCTGATTACCTCATAAAAAATTTCAGACAA
CTTCAAGTATTCTGATGCTTGTGATTACTTGAAGAAATTACATGTAGCACTCCAG
AACCCCTGACAATGATCTTGGCAGCCAGGTCTCTCTACAAATGGTTCTAGAAGCTTT
CAGGTAGTCGACTCTGGCAGTAGTACTTGTGACTCTACTAGGTCTTCTCAT
(SEQ ID NO: 49)

18528

ACAGAGATGTGCAATATCTGTCCTTGTCTATTGTACAAATAGAGTCACTGGCT
AGAAAATCTGTTCTCCAGCTGATGGCTATGGCTATTGTATTCTTCCCTTGA
AGTTGTTGATATTCTGCTGGAAACAAGGATATGAACTCATTATAGCTGTTTCCCTTCTT
CTCTTAAAGGGAGGATATTATATAATAATTCTCAACTTCTTAACTAGACATCAGTAACC
TCAGTCITCATTCTCACTAAATAGCAAACCTTCCCATAAATTCTGATTACCTCATAA
[G, A]
AAATTTCAGAACACTTCAAGTATTCTGATGCTTGTGATTACTTGAAGAAATTACATGTA
GCAGTTACTCCAGAACCCGACAAATTGATCTTGGCAGCCAGGTCTCTAGAAATGGTT
TTCAGAAGCTTCTCAGTAGTCGGACTCTGGCAGTAGTACTTGTGACTCTACTAGG
TTCTTCTCTCATTTAAAGTCATCTCAATTATGAAATGCAAAAGCTTCTATGTTAGGAGC
CTGTTTCATCTTATGTTAATTATATTCTTACAGTGGCAAGCTTACTGACCTACGGT
(SEQ ID NO: 50)

18722

TATTATATAATAATTCTCAACTTCTTAACTAGACATCAGTAACCTCAGTCATTCT
CACTAAATAGCAAACCTTCCCATAAATTCTGATTACCTCATAAAAAATTTCAGACAA
CTTCAAGTATTCTGATGCTTGTGATTACTTGAAGAAATTACATGTAGCACTCCAG
AACCCCTGACAATGATCTTGGCAGCCAGGTCTCTCTACAAATGGTTCTAGAAGCTTT
CAGGTAGTCGACTCTGGCAGTAGTACTTGTGACTCTACTAGGTCTTCTCAT
[T, C]
TAAAGTCATCTCATTATGAAATGCAAAAGCTTCTATGTTAGGAGCTTCTCATCTTAA
TGTAAATTATATTCTTACAGTGGCAAGCTTACTGACCTACGTGAAATAGACTGTTCC
TCTCTAGGAAATGATGTTTAAGACTGAAGGACTAGTGTGTTAAGAAAAATGGAAAT
GAATCTCATAGCTCTAAGACAAATTAAATCAGCTATAAGTTATGTTACTAAATAT
GTCCTCATGATTAGCAATTAGATACTTTTATTATTCTTACAGTAAAGGAG
(SEQ ID NO: 51)

18775

TCATTCTCACTAAATAGCAAACCTTCCCATAAATTCTGATTACCTCATAAAAAATT
CAGAACACTTCAAGTATTCTGATGCTTGTGATTACTTGAAGAAATTACATGTAGCAGT
ACTCCAGAACCTGACAATTGATCTTGGCAGCCAGGTCTCTAGAAATGGTTCTAGA
AGCTTCTCAGTAGTCGGACTCTGGCAGTAGTACTTGTGACTCTACTAGGTCTTCTT
TCTCTATTAAAGTCATCTCAATTGAAATGCAAAAGCTTCTATGTTAGGAGCTGTT
[C, G]
ATCTTATGTTAATTATATTCTTACAGTGGCAAGCTTACTGACCTACGTGAAATAGA
CTGTTCTCTCTAGGGAAATGATGTTTAAGACTGAAGGACTAGTGTGTTAAGAAAAA
TGAAATGAATCTCATAGCTCTAAGACAAATTAAATCAGCTATAAGTTATGTTAC
TAATATGTCATGTTAGGAAATATAAGATACTTTTATTATTCTTACAGTAAAGTTA
AAAGTGAATTCTGTTGTTAGGTTAAAGGAAACAAAGCTTGGGTTCTCTTCTCAGTC
(SEQ ID NO: 52)

18951

CAGAACGTTTCAGGTAGTCGGACTCTGGCAGTAGTACTTGTGACTCTACTAGGT
CTTCTCTCATTTAAAGTCATCTCAATTGAAATGCAAAACCTTCTATGTTAGGAGCT
GTTCATCTTATGTTAATTATATTCTTACAGTGGCAAGCTTACTGACCTACGTGAA
ATAGACTGTTCTCTCTAGGGAAATGATGTTTAAGACTGAAGGACTAGTGTGTTAAG
AAAAATGGAAATGAATCTCATAGCTCTAAGACAAATTAAATCAGCTATAAGTTA
[T, C]
GTACTAAATATGTCATGTTAGGAAATATAAGATACTTTTATTATTCTTACAGT
TTGAAAGTGAATTCTGTTAGGTTAAAGTTAAAGGAAACAAAGCTTGGGTTCTCTTCTC
AGTCGGTCCCGAGAAAATGCAAACGGTGTCAAATAATTCCATCACGGGATGCTGTC

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FIGURE 3R



Docket No.: CL001010

Serial No.: 09/776,705

Inventor: Karl GUEGLER et al.

Title: ISOLATED HUMAN TRANSPORTER PROTEINS...

ATGTACCTGCTTGGGGCCTCTTGGTAACTTAACTTCTATGGTAGGTCACTCTGAAAG
 TCAATTCTCTATAAGCAAAATCTTGTAGGCTGGCTCTGACCTGGTAGGTATGATTTT
 (SEQ ID NO: 53)

18974

ACTCCCTGGCAGTAGTAGTACTTTGCTGACTCTACTAGGTTCTTCTCATTTAAAGTCATCT
 CATTATGAAATGCAAAGCTTCTATGTTAGGAGCCCTGTTCTATCTTATGTTAAATTATA
 TTCTTATTCACTGGGCAAGCTACTGACCTACGTGAAATAGACTGTTCTCTCTAGGGA
 AATGATTGTTTTAAGCTGAAGGACTAGTGTAAAGAAAAATGAAATGAATCCTCATT
 AGCTCTAAGACAATTAAATCAGCTATAAGTTATGTTATGTTACTAAATATGCTTCATGAT
 [T, G]
 AGCAATATAGATATACTTTTATTATTATTTTCACTTTGAAAGTGATTTTTTTGTA
 AGTTAAAAAAACAAGCTGGTGTCTTCTTCCAGTGGTCCGGAGAAAAATGCA
 AACGGGTGCAAATTTCCATACCGGGATGCTGTCATGTAACCTGCTGGGCCCCCTT
 TGTTTACCTAACCTCTATGGTAGTCACITGAAAGTCATCTCTATGCAAATCTT
 GTAGGCTGGCTTGTGACCTGGTAGGTATGATTTAAAGATGCTCTATAAGCATG
 (SEQ ID NO: 54)

19540

GGTATGTTTTAAAAATGCCCTCTATAAGCATGCTCTATAGATGACACATATTCAATT
 AATATACTATTITAGTTTGTCACTTGACCTGAGGAATGGGGCTGATTAGCCTGGCT
 AACAAAGTACAAGAAATTGTGAATTAAACCTTATTATAAAAAAATACCTCAAACAAA
 ATTATTTCTCTAGGGATAGATGATAATTCTCTGGCTAGACTCCATAGTCACACTCAGG
 CTACAAGTGATGAGAAATGAATCCTTGATGTTGATAAGCTCTTGTATGGAATTATTA
 [A, C]
 CGGCCACACAAATAGCAGGGAAACTGCCAGGTCTCAAGTTGAAATTGCCCTCTCTTAA
 CCAGTCAGTCAAATCTGGGAGCTGGGACTTTAGGIAAAATTCTGACATATCCCATTCT
 TATTTGTTACTAAATGATTCTTAAGAAAGAGGACATGACAGAATTTCCTTCATCT
 AAGAATGCCACCAACAAAAAAAGTGACTATGCCACATTAGATTATGCCCTCAACATTCT
 CTCTCTGGCATCTAACAGTTCAACAAAGGGAGTAGGATTGTTACTCCATGAAGTG
 (SEQ ID NO: 55)

19841

CTGCCACACAAATAGCAGGGAAACTGCCAGGTCTCAAGTTGAAATTGCCCTCTCTTAA
 CCAGTCAGTCAAATCTGGGAGCTGGGACTTTAGGIAAAATTCTGACATATCCCATTCT
 TATTTGTTACTAAATGATTCTTAAGAAAGAGGACATGACAGAATTTCCTTCATCT
 AAGAATGCCACCAACAAAAAAAGTGACTATGCCACATTAGATTATGCCCTCAACATTCT
 CTCTCTGGCATCTAACAGTTCAACAAAGGGAGTAGGATTGTTACTCCATGAAGTG
 [G, A]
 CCACATAACAGATTTCATGGAATCACATATTGACCTGGTAGCATATGTTACATGAATC
 AGTGATCAATATAAATATATTGTTGATAAACCTCTTAAAGTTTAACTTAATT
 TTTCCTACTGACTTGGTAAATGAAATTGCTGATGACAATTGCGAACAAAAGATTCT
 AGGGTAGGCCACCTTGTAGGTTTTCTATTGACTAAATTGACTATTAAAC
 CAAACATGCTTTAGATTGGCATTAACATTGGCTGGTAGGTTGAAATAATGAATGCGA
 (SEQ ID NO: 56)

20170

TATTGACCTGGTACATGTTACATGAAATCAGTGTTATCAATAATAATATTGTA
 TAAACCTCTTTAAGTTTAACTTAATTCTTCTTACTGACTTGGTAAATTGAAATT
 GCAATGATGACAATGIGGAGAAAAGATTCAAGGAGTACGGCTGGCCACCATTTGCTTAGGTT
 TTTCTCTATTGACTATAATTGACTATTAAACAAACATGTCCTTAGTTGGCTTAA
 CTTTGCGGTGIGAAATAATGAAATGACAGGGCTAACATACTACTGAAGGTATTTCCT
 [A, C]
 CTTTGIGCTGATCTGGGAGAAAATCAACATGGCTGATCCATAGAATTCTCTG
 TTATTTGCTCTGGAGCTGAAATGAGGTCTTCAAGTAGGGCTGCATCTCGCTCTA
 GAGTAGTACCCACTGGGAGACCATCTAAATTAACTAAATTATCCCTGACGTTACTT
 ATACTTATTAAATGAGTTCTATAAGCAAGCAAAATGAAAGAGGCCAAAATATCT
 GTTTTAGTGTGAGTAGGGTACATGTTGAGCTGAGAAATAATGTTAGCAATCA
 (SEQ ID NO: 57)

20343

TAGGTTTTCTATTGACTAATATTGACTATTAAACCAACATGCTTGTAGATTGG
 GCATTAACCTTGTGCGGTGIGAAATAATGAAATGACAGGGCTAACATACTGAAGGTAT
 TTCACTACTTTGCTGATCTGAGGTGAAAATCAACATGGCTGATTCCATAGATA
 TTCTCTGTTATTGCTGCTGGAGCTGATGAAAGGTGTTTCATGTTAGGGCTGCATCT
 TGCTCTAGAGTAGTACCCACTGGGAGACCATCTAAATTATACTAAATTATCCCTGCA
 [T, C]
 GTTACTTATACTTATTAAATGAGTTCTATAAGCAAGCAAAATGAAAGAGGCCAAA

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FIGURE 3S



Docket No.: CL001010

Serial No.: 09/776,705

Inventor: Karl GUEGLER et al.

Title: ISOLATED HUMAN TRANSPORTER PROTEINS...

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AATATCTGTTTATGTTGGTGTGGAGTCATAGTGTGAGCTTGAAAAATGGTAGCAA
TCATTCACTTACAGTTTACACACTGGGTTGTAACCTGCACTCAGGAGTGGCTGCACAGG
TAGGGACAGGGGAGGTGGTAGGCTGGGAGAGACAATATGGGGCTGGGCTCATCC
CCTTCAACAAGACCACTTGGTCTCTGTAATTGCTCTGTAACAGGGAGAT
(SEQ ID NO: 58)

20519 GATATTTCTTGTATTGTGCTGGAGTCCTGAATGAAGGTGTTCAAGTAGGGCTGC
ATCTTGTCTTACAGTGTGAGTCACCACTGGAGACATCTAAATTATACTAATTATGCC
TGCACTTACTTATACTTATTATAATGAGTTCTACATAAGACAAGCAAAACTTGAAAGAGC
CCAAAAATATCTGTTTATGTTGGGTGATGGAGTCATAGTGTGAGCTTGAAAAATGGT
AGCAATCATCCTACAGTTTACACACTGGGTTGTAACCTGCACTCAGGAGTGGCTGC
[G, A]
CAGGTAGGGACAGGGGAGGTGGTAGGCTGGAGAGACAATATGGGGCTGGGCTCTC
ATCCCCCTCAACAAGAGCACCTTGGCTCTGCTGATTTGTAATTGCTCTGTAACAGGG
AGATAGATTATCACAAATGTAATGACGCTTGAGGGCTCTTATTGTAATTATACCTTC
TGCAACGTTATCAGCTTCAGGACCTCTTGTCTGATTTGTAATGAGGTGCACTAGCTAATG
AGCTCAGAGGCAAGAGGAGGGCTGGATCCAGGCTAGGCTTTCTCTGTTCT
(SEQ ID NO: 59)

20963 TGAGCTTGGAGGGCTTTATTGTATTATAACCTCTGCAACGTTATCAGCTTCAGGAC
CTCTTGTCTATTGAAAGGTGCTAGCTAATGAGCTCAGAGGAAGACAGAGGT
GCTGGATTCCAGGCCAGGTCTTCTCTGCTGTTCTCTCTCTCTCTCTCTCTCT
CATAAAGTGACCTGTGCTGATTGACAACACCAAGGGTTTCTCTCTCTCTCTCT
AGGAGAAGTTGAAGATGATTACTCATGCCTACAGCAAAGTGATAACATTAGACATCC
[T, C]
CTCTCTCATGGTTOGCCCTGGCAGTCCTGTGGCAGTAACACTAACTGTGCCATTGCTC
TTCAGCTAAGTACATAAGACTTGTGAAAGAAACCTACTGACCCATAATTAGTAC
ATGTTCTACCTTCATTGTATTAAATTAGGTGAGTTGCAATTGCAATGCTGAG
GATAATTCTTCTATAGCATTGTGAGTCACITAAATTGGCATTAAATGTTGAGATAG
AGCAAGTAGTTCTAGGTGGTATTGTAGTGTAGGAAAAAAATCAAAACTTATT
(SEQ ID NO: 60)

21840 AAACAGTTATGCTATCTATCACATATCTCTCACACATGCCCTCTGCCAGACTCACACC
AGGTCAACCCCTCCCTGGCATTGTCACTGGTCTGAGTTGCTGAGATCCAGAGGA
CTCTGGTAGTGAAAGATTGGCTGTTGAGTTAAACCAACCTAAGGATAACACAGGT
CTTCACCCCTGCCAGCTCTGTTCTAAACACTGAATTACTCATTTGAGGGG
GAAAAAAATAAGTGCACAGTAACCAAGGACTGCTCTGGACATAATGTTCCATACAGGGCT
[G, T]
GCTATGAAAGACTATTCTATAATGACACTGTGGTCACITTAATGAGCTTGTTGCTG
AAATATATTGGCACATTCTTTCTGATGAGTGCATGAAATCAGATCGTACTACTATG
GGGCTAATATTACTCTAAATCATGCTCTGCTCTAAATATCTGAAAGTATTCTGAG
ATGACATACACATAGCTTCTGGCTAAATCAGCTGGCTCTGGTCAAGACAGAACACA
ACTATAAACAGAGGTATAGGTTAAATTGCCAGGAAACAACITCACTGAGAAA
(SEQ ID NO: 61)

22783 TGAGAAATAAGCACTGATATAATCTGACCATCAGGAACAGCAATAGTGTGAAACATT
AGATGCCATTGAAACAAAATTGACCTACAAAGACAGAGTTCTGAGAAAAATGACTAATG
TGCTCTCATATGTAATTGCACTCAACATTAGCATTTGAAACATTCTGACATTATC
CTGCTCTCACCCCTGCAATGTTACATTATAATCTGTTGAAAGTGCTCCACTGCCAAC
AGAGTCATAAGTCCCTGGACTGGTGAATGTCAGTGACTGGCACAGAGGGTGAGCTC
[C, T]
GTCGTGCTGGAGAAAAATGGCTTCAAATGAACTCTGCCCTGCTGAAATGATAAA
ACTGCTTCTGAGCAAAGGATAGACACTCTTCCCTGGTGAATGTCAGGAAATT
AGCTGGGTGAGGATCTGGCTAAATGACCAAAACCTCCCTATACATGAAAGGATAACAG
AGATGTCAGAGAGTGCTACTCCGTGAGTGGATCTCAATCAAGTCCCTGAGCTA
AATTCATAATTCTTCTTCTAAATGATAAAAGTGTTATTGGGGCTTGTGTTGTT
(SEQ ID NO: 62)

22787 AAATAAGCACTGATATAATCTGACCATCAGGAACAGCAATAGTGTGAAACATTAGAT
GCCATTGAAACAAAATTGACCTACAAAGACAGAGTTCTGAGAAAATGACTAATG
CTCTCATATGTAATTGCACTCAACATTAGCATTTGAAACATTCTGCACTTATCTG
CTCTCACCCCTGCAATGTTACATTATAATCTGTTGAAAGTGCTCCACTGCCAACAGAG
TCATAAGTCCCTGGACTGGTGAATGTCAGTGACAGTGACTGGCACAGAGGGTGAGCTGTC

FIGURE 3T



Docket No.: CL001010

Serial No.: 09/776,705

Inventor: Karl GUEGLER et al.

Title: ISOLATED HUMAN TRANSPORTER PROTEINS...

$$[G, A]$$

TGCTTGGAGAAAAATGGCTTCAAATGAATCTTGCCTTGTCTTGAATGTATAAACGG
CCCTTTCTAGCAAAGCATAGACACTTTCCTTGGTGCACATGIGCTAGGAATTCACTT
GGGTTGAGGATCTGGCTAAATGAACCAAACCTCCCTATACATGAAGGATAACAGAGAT
GGTGACAGAGAGTGGTCACTTCGGTGAGTGGATCTCAATCAAGTCCTCTGAAGCTAAATT
CAATTTTTCTTCTTACTAAAATGATAAAAGTGTGTATTGGGGCTTTGCTTGTATT
(SEQ ID NO: 63)

22825 CAATAGTGTAAACATTAGATGCCATTAGAACCAAAATTGACCATAGAACCCAGAGTC
AGAAAAATGACTAACTGCTGCTTCATTATGTAATTTCACATCACACATTAGCATTTATGA
AACATTTCGACACATTATCCTGCTCACCCTGCAATGTTACATTATATAATCTGCTGTA
AGTGCTTCACTGCCCCACAGAGTCATAAGTCCCTGGGACTTGGTGAATGTCACAGTGACT
GCCACACAGGGTCAAGCTCTGCGCTTGGAAAGAAAATGGCTTCAATGAATCTTGC
[T, C]
TTGCTTGTAAATGATAAACTGCCTTCTAGCAAAGCATAGACACTCTTCCCTTGGT
GACATGTGCTACGAATTCACTGGGTGAGGATCTGGGCTAAATGAACCAACCTCCCTA
TACATGAAGGATACACAGAGATGGTGACAGAGTGTCACCTTCCGTGAGTGGATCTCAA
TCAAGTCCCTGAGCTAAATTCAATTCTTCTTCTTCTAAATGATAAAAGTTGTTAT
TGGCGCTTGTGTTTCTGATAACCTTGGGCTCAGATTTCATGIGTCAAATG
(SEQ ID NO: 64)

22967 CCTCACCCCTGCAATGTTACATTATATAATCTGCTGTAAGTGCCTCACGTGCCCCACAGAGTCATAAGTCCCTGGGACTTGGTGTGACAGTGACTGCACAGAGGGTGAGGCTCTGCTGCTGCTTGGGAAAGAAAAATGGCTTCAATGAATCTGCTTGTCTGAATGTATAAACCTGCCTTTCTAGAAAAGCATAGACACTCTTCCCTGGTGAACATGTGCTACGAATTAGCTGGTGTGAGGATCTGGGCTAAATGAACCAACCTCCCTATACATGAAGGATAACAGAGA
[A, T]
CGTACAGAGAGAGTGGTCACTTCCGTGAGTGGATCTCAATCAAGTCTCTGAAAGCTAAATTCAATTTTTTCTTTACTAAAATGATAAAAGTTGTTATGGGCTTTGCTTGTGTTTATTCTGTTAACTTAAGGCTCAAGTTCAATGTCATAATGCTGACTCAACGCAATGGTCTCCGTACAGTTATTTCATTAAAGGAACCTTCAACCGAGTAAGTTATTACTTGCTTGTATCTCCACACATTAAATAAAACCTAACAAAACCTAATCTGAAATTAAATCTATCAGCTTAT
(Seq ID No: 65)

23248 CATGAACGATACACAGAGATGGTACAGAGAGTGGTACCTTCGGTGAGTGGATCTCAATC
AAGTCCCTCTGAAGCTAAATCAATTTCCTTACTAAATGATAAAAGTGTATG
GGCTTTGCTGTTATTCTGTATAACTTAGGGCTCAGATTTCATGTCGAAATGCT
GACTCACAGCATGGTCTCTGACAGTTATTCAATTAAAGGAACCTTCACCACTGA
TTATTACTTGCCCTGATACTCCACACATTAAATAAAACTAACAAACCTAATCTGA
[A, G]
TTAAAATCTATCAGCCTTAGGCATTATTCTTGCTCTCTCTTCAACATGGTAACCTGG
GCTCTCTTCTTAGGAGCTTGAGAAGATACTGACTGGGGTTGTTCTCTACTTCATT
ATTATCTTCTTCTTCTCAATCAGCTTAGTCTTCTTCTTCTTCTACTGCTATAGTA
ACTGCTCTGAGTATTCTTGACAAAGTGAATAAAATGAATTAAAGGTAGTGTCTTC
CTAGCAGCCCAACATTCTCTCTTCTTAGTGTGGGTTGTTCTAGTTAAGGAATGGC
(SPO ID NO: 66)

23764 GAAATGAATTAAGGTAGTGTCTTCACTAGCAGCCCCAACATTCTCTCTCTAGTAGTGTG
GGTGGGGTATCAGTTATGGAATGGCACCTCTTCCAGAGGACTGATCATGTCATTTCTAG
CTTATGCCTCCCTTATGAGTAAAGTTCCATATTCATAAAGAACAGAAACCAAT
AATCCTAATGGATATAATGAAACACACAGATGAAAATTTCACCTGCCATGCCCTTGAAGA
AAAGATCCCTAGCTACTTGTATTTCACTCTATAATTAAATCAGTCCTTCACTTATGTT
[G, T]
TCTTCAGATCTCCGTGTTTGAAGTGTATATAGATATCAACATAGAAAATGCAGGGTATATT
GCTATCACTGGCAGTGGAGGACTGATTGTTAGGTGTTTCAACATCCTTGCCTTAAGCAA
CCTGGAAAATCAAAAGTGTGAGCTAGCTAAACAAATGGAGAGGGCTTTTTTTTTTT
AAGAGTTAGAACTAAGACTCTACATTCTCTGTGCTCOCACATTTCGACCTTCACATT
GGGGCCCCCTGCATCGAAATACAGCACCCCCCTAACAGGGCTCTGTCAGGACTCTTCTCTG
(SPO ID No.: 67)

23765 AAATGAATTAAGGTAGTGTTCCTACTAGCAGGCCAACATTTCCTCTCTCTCTAGTAGTGGG
GTGGGGTATCAGTTATGGAAATGGCACCTCTTCAGAGGACTGATCATGTCATTTCTAGC
TTATGCTTCCCTTTAATGCGATAAAGTTTCCATAATTCTCCATAAAGAACAGAAACCAAAATA

FIGURE 3U



Docket No.: CL001010

Serial No.: 09/776,705

Inventor: Karl GUEGLER et al.

Title: ISOLATED HUMAN TRANSPORTER PROTEINS...

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ATCTAAATGGATATATAATGACACACAGATGAAAATTCTGCGCATGCCCTTGA
AAGATCCCTAGCTACTTGTATTCATCTTAAATTTAATGAGCTTTCACTTATGTT
[C, T]
CTTCAGATCTCCCTGTTGAAGTGTATATAGATACTAACATAGAAATGCCGGTATATTG
CTATCACTGCGAGTGGACCAGTGTCTGAGGTTTCCAAACATCCCTGCCCTAACGAAAC
CTGAAAATCAAAGTGTAGCTAACAAATGGAGGGCTTTTTTTTT
AGAGTTAGAACTAAAGACTCTCACTTCCCTCTGCGCTCCACATTGACCTTCACATG
GGCCCGTGCATCAGAACACAGCACCCCTAACAGGCTCTGTCAGGACTCTCTCTGG
(SEQ ID NO: 68)

24432 GGATGGTGTGGGACCTCCCTGACCCACAGCATCTGACCCACATTCCAGGTTCTAGC
GACTTGTGTCAGTAAAGAAAAGGCACATAGCTAAGTGGAAAGCCAGATGAGGCTTGGTG
GAAATCAGCCAGTGGCTGCCCTAGCAAAGGAAACAGAACCTGCTGGGGCTTTGGTCC
TAGGCTCACTACTCAGGGAGGACITTAACATGGAAATGACAGCAACTTCTCTCTGAT
CTTTCACCAACACCACAAAGCTAGTACCTCCCTCCCTCTTGCTCTGTCCTCTCTC
[A, G]
GGAATGCACTGAAACCACTTCAGTTGTTGAATTTCCTATTCCCTATTTCAGAAA
GAGGAAGAACCTTTGCAATTCAACCGCTCTACCTTATTCCATAAACCTTCTG
TGATCTCATATCATTAGGCAATGTTAATCTCTGGGAGCCAGGACTGCTTCA
TTCAAGGCGCTGGACATATAGGACTGCGCTCAACTCACTCAACTCAGCTTATTGACIT
GAATGCACCTTTAAACAAGTGAATAAAACAAACTGIGACTATTCTCTGAAAATGAGC
(SEQ ID NO: 69)

24538 GATGAGGCTTGGTGGGAATCAGCCAGTGGCTGCCCTAGCAAAGGTAACAGAACTGCTG
GGGCCTTTCGGCTCTAGGCTCACTACTCAGGGAGGACITTAACATGGAAATGACCCAGAA
GTTCTCTCTGATCTTCCACCAACACCAAGCTAGTACCTCCCTCCCTTCTGCT
CTGTTGCTCTCTGGGAATGCACTGGAAACCCCTTCAGTTCTGTTGAATTTCCTA
TTCCTTATTCAAAGAGGAAGAGCTTGTCAATTACTCCAAACCGCTCTACCTTATT
[C, G]
CCATAAACTTCTGTACTCATATCAATTAGGCCAAATGTTAATCTCTGGGAGCCAGG
AGACTGCTTCACTTCAAGGCCCTGGACATATAGGACTGCGCTCAACTCACTCTA
CAGCTTATTGACTTGAATGCACTTAAACAAGTGAATAAAACAAACTGIGACTTATT
CTCTGAAAATGAGCTTATCTCATACITATTATTCTGTTAACACTGIGAAACAAATT
AAGTCCCTGGACTATGTAATACCATAAAAGCTTATTGIGAAAGCTACTAATTGGAC
(SEQ ID NO: 70)

24693 CCTAGTACCTCCCTCCCTTGTCTGTTGCTCTCTGCCGAATGCCACTGGAAACCAC
TCAGTTCTGTTGGAATTTCCTATTCCCTATTCAAGAAAGAGGAAGAGCTTTGCA
TACTCCACCGTCTACCTTATTCCCTAAACTTCTGIGATCTCATATCAATTAGCC
AAATGTTAATCTCTGGGAGCCAGGAGCTGCTTACATCAGAGGCCCTGGACATAT
AGGACTGCGCTCAACTCACTCACTCAGCTTATTGACTGAAATGCACTTAAACAAG
[T, C]
GACTAAAAAAACAACTGIGACTTCTCTGAAAATGAGCTTATCTCATACCTTATT
TCIGTTAAACACTGIGAAACAAATTAGTCTCTGGCACTTATGTTATACATAAAAGC
TTATTGIGACTAATTGGACCAATTGIGACAATTGIGAAATGAGCACTAATTGAG
ATCATAATGIGAAATTAGGCTGCTGAGAAAACAATAACACCAATTGCTTCTCA
GTTCTCTTCAAGATGAGTTCAATGIGACTAATCCAATTTTAAACCTTCTACA
(SEQ ID NO: 71)

24819 AACCGTTCTACCTTATTCCCTAAACTTCTGIGATCTCATATCAATTAGGCCAAATG
TAATCTTCTGGGAGCCAGGAGCTGCTTACATTAGGCCCTGGACATATAGGACT
GCCCTCAACTCACTCACTCAGCTTATTGACTTGAATGCACTTAAACAAGTGA
AAAAACAAACTGIGACTTCTCTGAAAATGAGCTTATCTCATACCTTATTCTG
TAAACACTGIGAAACAAATTAGTCTCTGGCACTTATGTTATACCAAAAGCTTATT
[C, T]
GTAAGGCTACTAATTGGACCAATTGIGACAATTGIGAAAGCACTAATTGCGAGCTATA
ATGIGAAATTAGGCTGCTGAGAAAACAATATCACACCAATTGCTTCTCTGAGTTCC
TTTCAGAATGAGTTCAATGIGACTAATCCAATTTTAAACCTTACAAAGGTTA
TTCTTAAACTTATTGAGGACTATCTGGTTGIGCAATTGAGAAATGAGCTTTC
AGGCTAACAGATGCCCTTAATTGIGAGGAGTGGTATGAGGAATGTCACATGAGAA
(SEQ ID NO: 72)

25743 TATCCAGTTACAGCAGCGTAACCTGAGCAGCTGCTGAAACTGAGGCTCTCTGACCCCT

FIGURE 3V



Docket No.: CL001010

Serial No.: 09/776,705

Inventor: Karl GUEGLER et al.

Title: ISOLATED HUMAN TRANSPORTER PROTEINS...

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CGCTTACCTTATTTCAGCTGCTAAAATAGGGCTGAAATCTGCTAGGATCCCTGAAGGGAG
GATAAGATCTACTATTCAATTAAATTAAAGCTTTTATTCTAGCTGCTGCTGCTGCA
ACACTAAGCTAGAAAGCTGAGGAATGTTAGATTATTAGCTCTGCTCTGCTTCTA
TAGATTACATCTATTGATAAGGAGAGCTAAAAGGAGAGAAAGGAGAAAGGAGAAACA
[C, T]

AAAAACGCTAAAATTAAACCATTTAAATTTAAATGTTAAATACCAT
GCAAAATTAAAGAAAACCTAGATTCTAAACATTCCCTTCAAACTCTGCTGAAATCAAT
TCAGTGCTTGCCTTAATGCTCATCCAGCTGATGAGACATGTTTGATCAACAAGG
GTTTACTATGTTCTTAATTATGCTCTGCTGTTATCTCTCTGACGGAGATTATT
TTAACAAATAATTCTGAAAACTAAGAAAGTGAAGCATAAAATATTGCTTATAAAATA
(SEQ ID NO: 73)

26044

AAAAACGCTAAAATTAAACCATTTAAATTTAAATGTTAAATACCAT
GCAAAATTAAAGAAAACCTAGATTCTAAACATTCCCTTCAAACTCTGCTGAAATCAAT
TCAGTGCTTGCCTTAATGCTCATCCAGCTGATGAGACATGTTTGATCAACAAGG
GTTTACTATGTTCTTAATTATGCTCTGCTGTTATCTCTCTGACGGAGATTATT
TTAACAAATAATTCTGAAAACTAAGAAAGTGAAGCATAAAATATTGCTTATAAAATA
[G, C]

GCAAGAAAAAAATGACACTCATTCAAAATATCAAAGCTAGCATCAAGACTGCAAG
ATGAATGCTACAGTCATGCTGCTTACAAATGTCAGACATGTTGATCAACAAGG
GCAATTGTCATTGCAAACCCATGAGATGCTACTGAGCTAAATTGGTGGAGGCT
ACTATACACTAAGCTTATGGCATAGCCCTAGTACTCTCTAGGCTACAAACCTGACAGCA
TGTTACTGTAATAGTGGAGGTAACCTGTAACATAATGGTAAGTATTGCTCCAA
(SEQ ID NO: 74)

26555

AGTACTCTAGGCTACAAACCTGCTACGGCTGTTACTGTAATAGTGGAGGTAACCTG
TAACATAATGGTAAGTATTGCTCCAAACGCTAGAAAGCTACTGTAAGAAATACAGTA
TTACAACTTCTAGGGTATCAGTCTTATATGCTGCTGTTGACCGAAATGACTATGC
TTAATACCACTGAACTGCTACACTTAAATGGTTAAGATGGAAATTCTATGTTATGTAT
GTTTATAATAATAAAAAATTGAAAAAGCATCAACATCTTCTGTTGAAAAAGAAAA
[G, A]

GAAGAAAAATGCAATTAGAGTGAATGAGAAATTTGAAGTAATAGATAAAGTCAAAACAA
CAAATGATCTGCTTCTGAAACTTCTGTTAAGATGCTACATGAGTCAACACTGTT
ATTTCCTAACCCACCTTCAGCTGGATACCGACATTCCCTGATGAGCTGCTTATGCT
ACTTAATAATGCTCTGGTCACTCTGCTGCAACTATAAAATCACCTCTGAGTCAAG
TGAGTTTCAGAAGGCTCAATTGGTCAACCCAAACTCACGGCTCATTAATGATGGAC
(SEQ ID NO: 75)

27886

GTTTATTAAAGTGTGCTGGCATCTCTTCTGCTAGGAACCTCTGGTAAGACATTGA
CTTGCCTGTTGCTTCTGAGGGCTTCTCTGCACTATGCTGATTTTATTCT
CCAGCAGTTTCTTATCTTAAACCTGTCAGAAAGAACCTTCTGCTCAGCCAAAAGGTC
GGGTAAAGTAACTCTGCAATTCCCTTATTAGTTGCTTCTGCAACTTCTGCTTATGCT
AACTAGAAAATACACATAGTCTAGAAAATGAATCAATGTCAGAAAGAACAAATCAA
[A, C]

TGGCTAGAACTTCTGGTAGCACAGAAAGGGACATATTCTGAAACTCAAATGATTCT
ACTCTAAATATCAAATATCTGCTGTTGAGCTGCTACATGTCAAATAGTACTGAGCTT
TCCACAGACACATATGCTCAGGAAATAGCTGCTGCTGCTGCTGCTGCTGCT
TATGGTGGAAAATCATGCAAGAAGGAATTAGGCTCTAGGGTGTATGGAATAATT
AAATATTGGTCAATGGTTGTTAGTTGCAAAGGAAAGGAAAGATGTTGCTTTGTT
(SEQ ID NO: 76)

31884

CTTCTATGGTACTTCTGAAAGAATCCATTGAGAGATGAAAATGAGAGAATAGAAGAAC
TGAGAATGAGTAAATAAAGGAGCACAGAAAATATGGGGCAGGGAAAACATGCTGAGTGCTA
AGGATGATTATGAATGACGATTAGGGGATTGATGGATCACAGGGTAAGTATATGCTT
AACTTATAAGAAACTTCCACATAGTTTCCACAGTGTCTTACCAATTCTCTTCT
CTGACTACCTACACTTCCACTGACTCCACAGGCTGCCAACATTGGTGTGCTTCT
[T, C]

ATTCTAGGCTTCTAGGGCTGAAATGGTAACCTATGCTGTTCTGCTTCT
GIGACAACTAATGTTGAAAACCTTCTAAGTGTAAATGGTACTCTACATATCTCTTCT
TGAGTGTGTTGTTGAACTTCTGCTGCTGCTGCTGCTGCTGCTGCTGCT
GTTATGAGAAGCTCTTAAATGGATCCATGTCAGGATGCAAAATATAATTGCT
CTCATGGTATGGTGTCTTCTAAAGGIGCTTAATTACATCTTCTGGGGCAGG
(SEQ ID NO: 77)

FIGURE 3W



Docket No.: CL001010
Serial No.: 09/776,705
Inventor: Karl GUEGLER et al.
Title: ISOLATED HUMAN TRANSPORTER PROTEINS...

TTCATTTCTGCTTCGTGACAACATAATGGAAACTTTCAAGTGTTAATGGTCACT
CATATATCTCTTTGTGAAGTGTATTCAAACTTTGCCAATTAAAATTAGGT
TATGTTTTTATTGGTATTGTAGAAGCTTTAAATATGGATCCATGTCCAGATGCG
CAATATATTTCCAGCTATGGTATGGTGCCTATTTCCTAAAGGTGTCTAAATTACA
TCTTCTGGGGCAGGTACCATAGCTAAAGTTTGCAATTATGCTTAATGAGATAA
[T,A]
ATTAATCAGAGTGGTATAGTCAAAATTAAATGTTTGATGCTGGGCCATATAGGTAG
GACTGGATCATCTAACCAAGATGCAAAAAAAACAAAAACAAAAATAGTACTTG
GAAAAACTTATTAAATTAAACA
(SBQ ID NO: 78)

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FIGURE 3X